CALIFORNIA
OIL WORLD
and Petroleum Industry

PUBLISHED TWICE A MONTH — ENGINEERING — TECHNOLOGY — LATEST NEWS

SECOND ISSUE
FEBRUARY 1942
VOL. 36 NO. 4
WHOLE NO. 1627

IN THIS ISSUE

In the service of our country

Administrative Highlights 5

Shell Pioneers Noiseless Well 9

Los Angeles Basin Developments 19

Coastal District Developments 21

San Joaquin Valley Developments 23

Camshafts—Methods of Extending Their Life and Increasing Engine Power Output 25

PETROLEUM PUBLISHERS, INC. 939 SO. BROADWAY BLDG.
LOS ANGELES, CALIFORNIA-MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

WALTER C. MONROE President and Editor
KINZIE MILLER Vice President

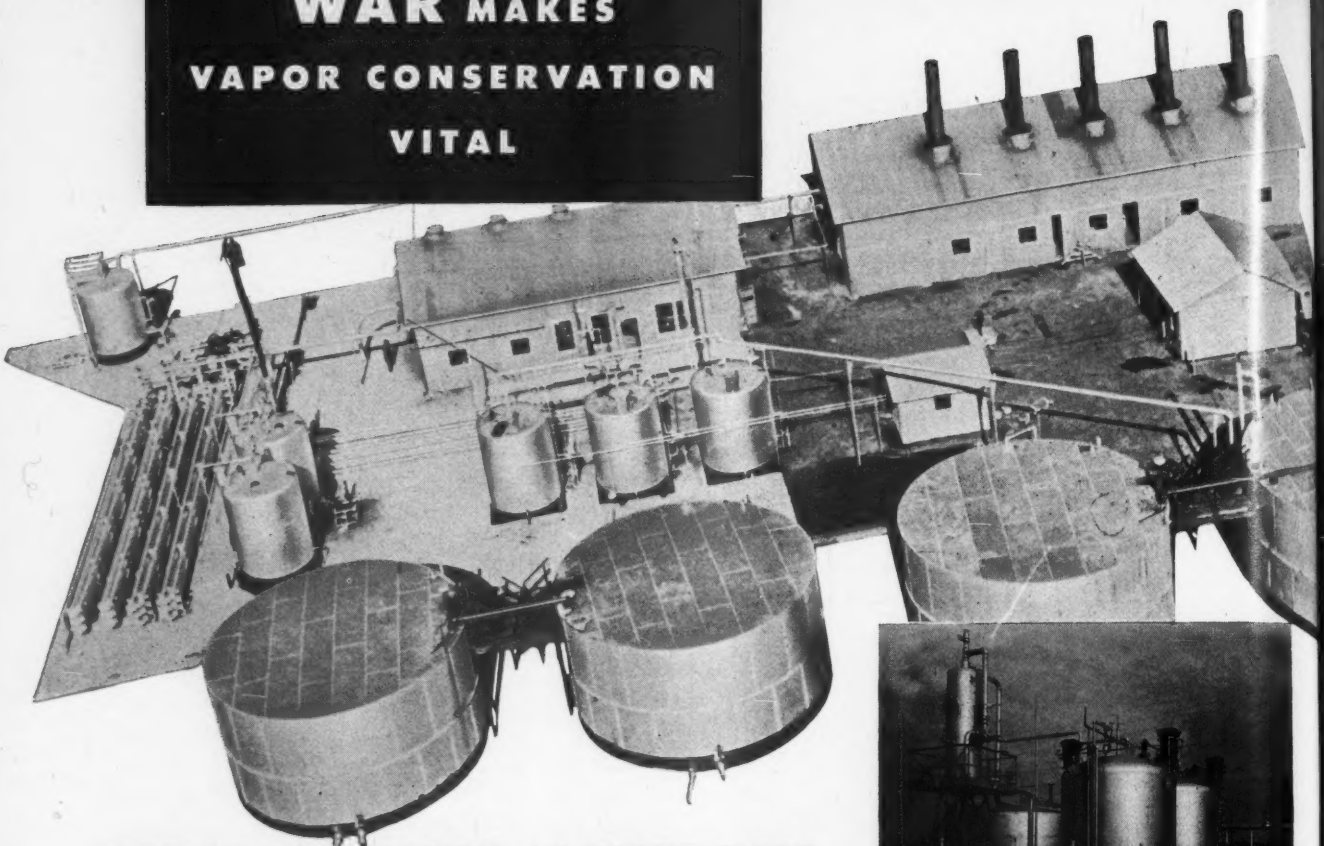
V. W. HEINZERLING, Manager California Oil World News Service and California Oil World Reference Edition

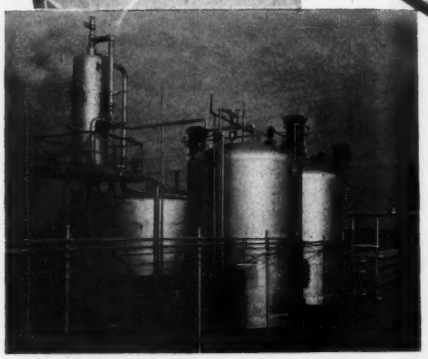
California Oil World and Petroleum Industry is published twice a month at 1009 in the 939 So. Broadway Bldg., Los Angeles, California. Entered as Second-class Matter January 16, 1937, at the post office at Los Angeles, California, under the Act of March 3, 1879. Subscription price $1 per year in U. S. and Possessions, $2 in foreign countries, including Canada. Member of the Audit Bureau of Circulations.

February 25th, 1943

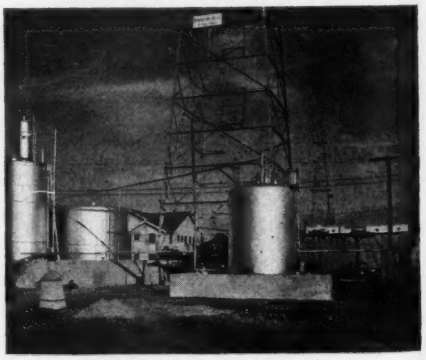
Telephone Number TUcker 2571

WAR MAKES VAPOR CONSERVATION VITAL





Vapor escape is not possible with Petreco. The entire flow system is closed.



The treated oil flows from the treater to storage. No additional settling space is required.

PETRECO DEHYDRATING, IN VAPOR-TIGHT TREATERS, IS A SURE CONSERVATION MEASURE

The expansion of the aviation gasoline and synthetic rubber manufacturing programs has increased greatly the need for the lighter gases. It is vital therefore, that producers conserve all the valuable light ends produced with the crude.

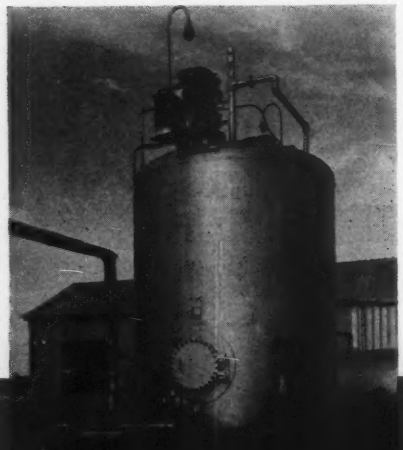
The Petreco Electric Process is enabling many leading producers to carry on their dehydrating without danger of vapor losses. The Petreco treaters are vapor-tight, and the emulsion is broken and separated right in the unit, eliminating the need for any additional settling tankage. This "one-shot" treatment eliminates the need for a lot of handling, further reducing the chance of vapor losses.

Many Petreco units have been installed because of the proved savings in gravity and volume. Now that the conservation of light ends is vital to production for war, such savings are doubly important. Petreco engineers will furnish complete information... at your convenience.

PETROLEUM RECTIFYING COMPANY OF CALIFORNIA

530 West Sixth Street, Los Angeles, California
5121 South Wayside Drive, Houston, Texas
Edison Building, Toledo, Ohio

REPRESENTATIVES IN ALL PRINCIPAL FIELDS AND REFINING CENTERS



Administrative Highlights •

P. I. W. C. Reports On Manpower

Manpower problems of the petroleum industry have already become critical in some branches of the petroleum industry, and particularly among technical and highly skilled personnel, and oil companies are urged to try to solve these problems within the industry, in a report of the committee on manpower to the Petroleum Industry War Council, William R. Boyd, Jr., Council chairman, announced recently.

The committee, of which John M. Lovejoy, president of Seaboard Oil Company of Delaware, New York, is chairman, has published its report, with fourteen specific suggestions, in a pamphlet for distribution to oil industry management.

"Oil workers are war workers", the committee emphasizes, and the most important step for every oil company in meeting manpower problems is to convince its employees that they are essential war workers, a fact that has been recognied by the Selective Service System and the War Manpower Commission, and that recently was stressed in a joint public statement by WMC Director Paul V. McNutt and Petroleum Administrator Harold L. Ickes.

The fourteen specific suggestions made by the committee are:

1. Establishment of a company employment pool.
2. Employment of women and older men, with examples of the types of oil-company jobs that women can fill.
3. Investigate the possibility of increasing the use of non-white employees.
4. Cease retiring employees who still are able to perform a job.
5. Search lists of former employees over 38 now in the armed forces, who may wish to return to your company under the provisions of recent regulations.
6. Do not attempt to persuade local draft boards to defer every employee. Use Form 42-A for key men and those in critical jobs only.
7. Encourage present employees to find new employees among relatives and friends.
8. Look for new employees among wives of young married men going into service.
9. Relax any rules that women who marry must resign.
10. Relax physical requirements to employ physically-handicapped people for certain jobs.
11. Use the Manning Tables developed by the War Manpower Commission.
12. Exhaust all possibilities of upgrading, job-break-down, and in-plant training.
13. Use every effort to obtain deferment for professional personnel, but do not overlook the possibility of women for some jobs such as laboratory assistants.
14. Smaller companies and individual operators should adopt similar policies modified to fit their size, planning in advance for the replacement of employees.

The committee recommended that oil companies use every possible method of informing employees of the essential nature of their work in the petroleum industry, through employee meetings, company magazines and special booklets, movies, local advertising, posters, and other means.

"Petroleum is the very life blood of mechanized war", the report emphasized. "Airplanes, tanks, jeeps, submarines, and battleships are fueled and lubricated with petroleum. Add butadiene for rubber, toluene for explosives, asphalt for runways, and the underlying importance of petroleum in the prosecution of the war needs no further presentation.

"Tell your employees that what they do and what thousands of others like them in the many jobs of the industry are doing is the composite contribution of this essential war industry."

Ickes and McNutt Issue Joint Statement on Importance of Petroleum Manpower

Paul V. McNutt, Chairman of the War Manpower Commission, and Petroleum Administrator for War Harold L. Ickes issued on Feb. 9th, the following joint statement:

"Reports are being received in Washington from a few places to the effect that oil company employees misunderstood the War Manpower Commission's recent statement about non-deferrable occupations.

"The reports are that oil, natural gas and gasoline company employees engaged in vital and essential jobs in that industry failed to report for work and instead were seeking employment in munitions plants or some other kind of work which they thought was listed as more essential by the War Manpower Commission.

"Petroleum is regarded as one of the most essential of war industries and has been so designated previously by the War Manpower Commission. Bulletins issued by the WMC to local United States Em-

ployment Service Offices, and Selective Service Occupational Bulletins Nos. 15 and 21, issued in August and September, 1942, for the guidance of local draft boards and of employers, list 179 specific classes of jobs in the petroleum and natural gas industry and its transportation service which are directly classed as essential activities.

"Oil and natural gas are vital to this war and it does not help to win the war for men who have long been trained and skilled in this industry to leave their present jobs. We wish to emphasize that while planes, tanks, and ships fight the battles, they cannot fight without oil to fuel them. The production, refining, transportation and distribution of oil and gas are all necessary.

"The same principle applies to other essential industries and to the countless services of civilian supply. Any man who reads the limited list of activities covered by the recent WMC Order will see that it is mere ly directed at things which either (a) can be done without for the duration of the war, or (b) can be performed by women, older or handicapped workers, or by unskilled workers.

"An Order which was intended to apply to such things as ornamental glass, costume jewelry, or greeting cards does not carry any implication for such vital industries as oil, mining, food processing and other essential industries which wartime America must keep fully manned.

"Employers and workers who want information on the essentiality of the work they are engaged in should consult their nearest local United States Employment Service Office."

Supplies & Distribution Subcommittee, District 5

Mr. A. H. De Friest, Vice Pres., General Petroleum Corporation, Los Angeles, California.

H. T. Earl, Tide Water Associated Oil Co., 79 New Montgomery Street, San Francisco, Calif.

L. E. Fleming, Standard Oil Company of Calif., San Francisco, Calif.

D. F. Gerstenberger, General Manager, Inland Empire Refineries, Spokane, Washington.

J. L. Hanna, Vice President, Standard Oil Company of Calif., San Francisco, Calif.

A. M. Kelly, Richfield Oil Company, Los Angeles, Calif.

H. D. Maxwell, Maxwell Petroleum Corporation, Tacoma, Washington.

L. G. McLaren, Vice President, Shell Oil Company, Shell Building, San Francisco, Calif.

B. O'Connor, Division Manager, Refining Department, The Texas Company, 929 South Broadway, Los Angeles, Calif.

A. C. Stewart, Vice Pres., Union Oil Company of Calif., 7th & Hope Streets, Los Angeles, Calif.

J. D. Jurs, Sec'y., Tide Water Associated Oil Co., 79 New Montgomery Street, San Francisco, California.

Soyster Appointed to Succeed Stabler

Hale B. Soyster of Chevy Chase, Maryland, has been appointed Chief of the Conservation Branch of the Geological Survey to succeed the late Herman Stabler, Secretary of the Interior Harold L. Ickes announced on February 11th. He was promoted from his position as Chief of the Oil and Gas Leasing Division of the Branch.

A specialist in the technology of oil and gas production, Mr. Soyster has served the Department of the Interior eighteen years, seventeen of them in the Branch which he now heads. His specialty has been safeguarding oil and gas resources on public lands, Indian lands and naval oil reserves, against loss or waste by improper methods of production.

In addition to his regular duties as field supervisor and regulatory officer in the various Federal oil and gas districts, Mr. Soyster has written or collaborated on numerous technical papers on oil and gas production and conservation. He has also testified as an expert before Congressional committees inquiring into the necessity for Federal regulations to protect the natural resources, with special emphasis on oil and gas.

In 1929 he was given leave to assist the Michigan State Geologist's office in preparing data on which conservation laws were to be based. His latest special assignment was to act as technical advisor to consul in a suit by the Federal Government to collect approximately $3,000,000 in contested royalties from lessees of Federal oil lands in California.

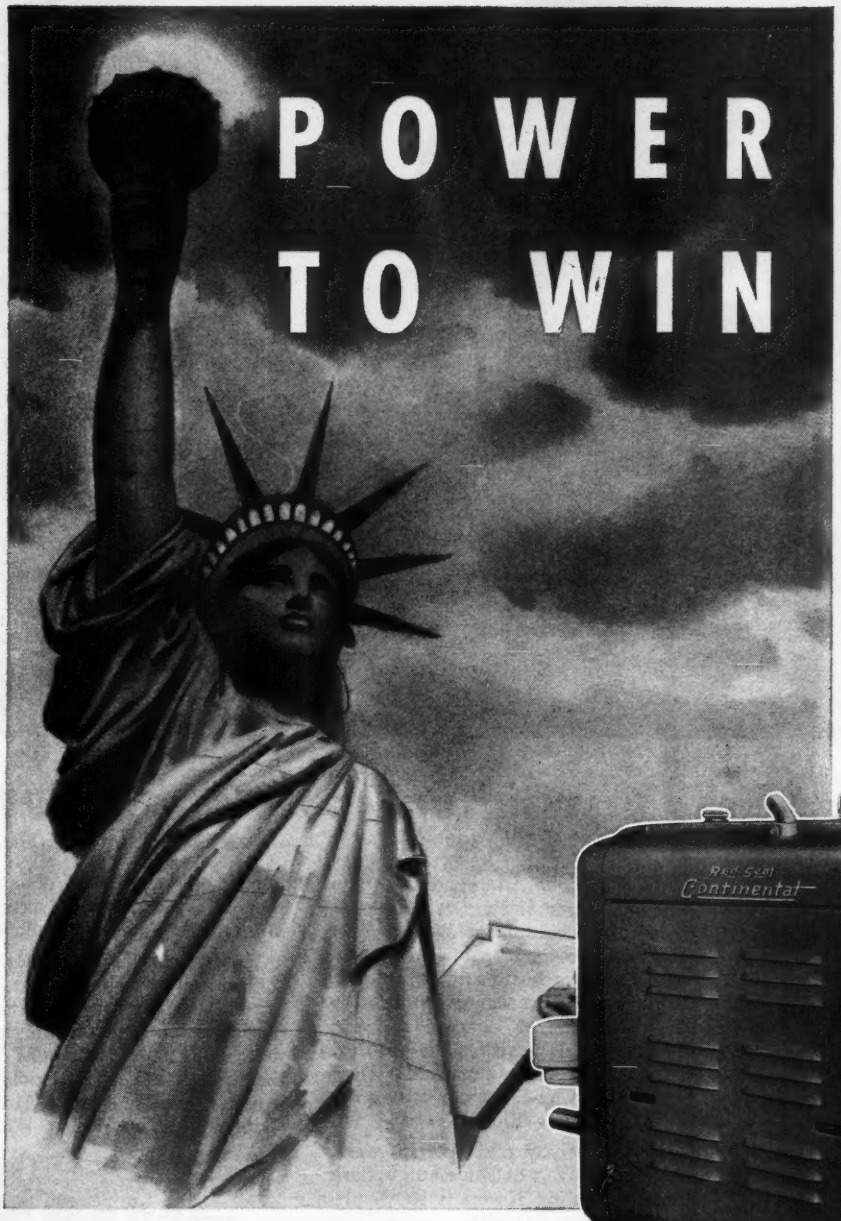
Mr. Soyster was born at Minneapolis, Minnesota, November 1, 1899, moving with his parents in 1903 to California where he was educated in the public schools at Compton, at Leland Stanford Jr. University at Palo Alto, and the University of California, Berkeley. He was graduated from the latter University in 1922 with the degree of A.B. in Geology. After service in the oil industry, he was appointed to the Department of the Interior as Associate Petroleum Technologist in 1924 and assigned to the Bureau of Mines' Oil and Gas Division. He began work at the Bureau's petroleum experiment station at Bartlesville, Oklahoma. After he had been on the job a year, the oil and gas regulatory and supervisory work of the Bureau of Mines was transferred to the Conservation Branch of the Geological Survey.

He was appointed Oil and Gas Supervisor of the Mid-Continent District in October 1926; supervisor of the Rocky Mountain District in January 1931; and Chief of Oil and Gas Leasing Division in January 1932.

BUY

DEFENSE BONDS

POWER TO WIN



ARMY E NAVY

Your Dollars are Power, too! Buy War Bonds

THE mighty power of dependable Continental Red Seal Engines is serving our fighters on land, sea, and in the air. It is also serving for industry, in the oil fields, and on our farms — serving to keep alight the inspiration and unconquerable "Power to Win" of American Liberty.

CONTINENTAL MOTORS — Powerful for the Nation — AMERICA'S STANDARD

Continental Motors Corporation

WE CAN DELIVER THIS COOLING TOWER *QUICK!*

Okay—let's go!

Key to the critical manpower situation is simplification of field tower erection which requires only unskilled labor. Tower erection is always under supervision of permanently employed Fluor Field Superintendents, who bring to your job many years of experience and all the necessary know-how. *Thus prefabrication solves another vital problem!*

THIS is a Fluor Atmospheric Aerator Cooling Tower. It requires no critical, hard-to-get equipment such as fans, gears and motors. It requires the fewest man-hours to build and completely eliminates the man-hours consumed in the production of unneeded auxiliary equipment. It requires the absolute minimum of critical materials. These are reasons why Fluor can deliver this kind of Cooling Tower—*quick!*

But another, equally important reason speeding delivery of Fluor Atmospheric Aerator Cooling Towers is 100% prefabrication in our plant—an *exclusive* Fluor feature. Important in peacetime, prefabrication is an even more desirable advantage in wartime. Because of it, Fluor has never once failed to deliver either ahead of schedule or on time during the Defense or War Program!

It means no delivery of raw lumber and no manufacturing operations on your premises with the attendant confusion and interference with your construction program or the normal conduct of your operations. Under Fluor prefabrication, the only work done on your property is actual erection accomplished in minimum time by a small crew.

Fluor Atmospheric Aerator Cooling Towers have established an enviable record for highest thermal efficiency in the service of some of America's foremost industrial organizations. They are the answer to the water cooling problems of industry today. Write for descriptive literature. *Be Sure With Fluor!*

FLUOR MANUFACTURES MECHANICAL DRAFT COOLING TOWERS

Under certain conditions Fluor can deliver Forced or Induced-type Mechanical Draft Cooling Towers. There must be a willingness on the part of customers to wait while sub-manufacturers deliver fans, gears and motors to our plant. They can be delivered only on the highest priority. That's why—for the duration—we recommend the Atmospheric type. In the meantime, Fluor continues with research and development of Mechanical Draft types to give you the advantage of many improvements when the war is over.

SINCE 1890

THE FLUOR CORPORATION LTD.
2500 SOUTH ATLANTIC BOULEVARD, LOS ANGELES, CALIFORNIA
NEW YORK • PITTSBURGH • KANSAS CITY • HOUSTON

FLUOR

ATMOSPHERIC AERATOR AND MECHANICAL DRAFT COOLING TOWERS

Shell Pioneers Noiseless Well

The most talked-about oil drilling project in the world today is Shell's Verne Community No. 1 in the heart of Los Angeles, which was spudded January 30, 1943.

Pioneering new methods, Shell is boring thousands of feet into the earth without a single rattle or bang that might disturb the slumbers of nearby property owners. Derrick and all machinery are swaddled like babies in fluffy rock wool, then enclosed in transite mineral board, making the operation not only sound-proof but fireproof. If a discovery is made, all future wells will be drilled from a central location, instead of being scattered over the lease and each drilling string will be sent by "directional drilling" to tap whatever part of the lease it is desired to reach.

Country Will Benefit

Shell's leadership in this venture holds great possibilities of benefits for the nation, the industry and the public. The country seriously needs new oil reserves and Shell hopes to open up oil sands that will yield abundantly. In order to demonstrate that drilling can be done in residential and business districts without objectionable noise, Shell has applied original ideas in insulating the derrick and thus heretofore undrillable urban locations can be opened to development. The public will gain because property owners will receive royalties from mineral wealth which heretofore has been locked away.

Before permission to drill was granted, the Los Angeles City Planning Commission asked the Petroleum Administration for War if the project was deemed essential. "It is of vital importance that all possible sources of oil in California, in Los Angeles County and in the city of Los Angeles, be explored as soon as possible," was the reply.

Government Endorsed Project

Petroleum Administrator Ickes notified Mayor Bowron that the War Production Board had released trategic materials needed to drill the first well and pointed out that California occupies a "strategic geographical location which necessitates a constantly increasing heavy drain on its oil resources."

The project received the support of Secretary of the Navy Knox in this statement to the Los Angeles City Council: "The needs of the armed forces of the United States and of the war production industries in the Pacific area for petroleum products, make it imperative that all possible sources of new production be examined in an effort to increase California's oil resources. For this reason, the Navy Department wishes to support the application for the authority requested."

Verne Community Lease covers approximately three hundred acres in what is known locally as Gilmore Island, being part of an old rancho. It begins at the 6200 block on West Third street and includes the Hollywood baseball park, Gilmore stadium for automobile races and athletic events, Pan-Pacific auditorium, the site of the new Metropolitan Life Insurance Company housing project, the grounds of a public school and some acreage belonging to a university.

Surrounding the Verne Lease lies a residential and business district of 1,500 acres or more, extending a mile and a quarter from Wilshire boulevard on the south to Rosewood avenue on the north and two and a half miles from San Vicente and La Cienega boulevards on the west to June street on the east. Shell is offering to drill wells under this outside property on a royalty basis and if sufficient property owners sign up this will be known as the Salt Lake Community Lease.

An unusual feature of the Verne Community Lease is that it gives Shell an "easement," as the lawyers say, or right to pass under that property from the central drilling location to reach the Salt Lake lease.

Incidentally, the name "Verne" was given to the new project in honor of Jules Verne, author of "20,000 Leagues Under the Sea," whose dreams once seemed fantastic but have been outdone by modern ingenuity.

Standing on Shell's property in the Verne Community Lease you can see Inglewood oil field five miles to the south, an important producing area. To the north, beyond Hollywood, lie the Santa Monica mountains where there is an outcropping of Middle Miocene sands, the same sands from which the Inglewood production comes. Shell is looking for these sands.

The area covered by the Verne and Salt Lake Community Leases encompassed in previous years the old Salt Lake oil field which produced 70,000,000 barrels of oil from 350 wells whose average depth was approximately 1,200 feet. This field was discovered in 1905 from oil seepages, drilling reached its peak in 1912, and the last wells were drilled in 1917 before deep drilling technique was developed. There still are eight producing wells in this area, one of them pumping away in the middle of La Cienega boulevard. These eight wells produce a total of about two hundred barrels daily. All are outside the area in which Shell is working.

Shell's plan is to drill far below the sands tapped by these shallow wells and to reach the deeper zones which have proved productive elsewhere.

Photographs reproduced here show the lengths to which Shell is going to merit public support in this venture. Samuel F. Bowlby, manager of Los Angeles Basin production division, says everything possible has been done to insulate drilling noise. For power, electric motors are used instead of steam en-

Youngstown

Seamless Oil Country Tubular Goods are now available in the New A.P.I. Weights and Grades

---

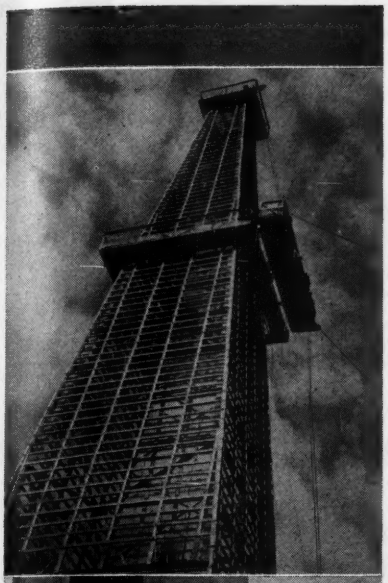
Youngstown is pleased to cooperate with the American Petroleum Institute and The American Iron and Steel Institute in this important Standardization Program which will conserve Steel so vitally needed for war.

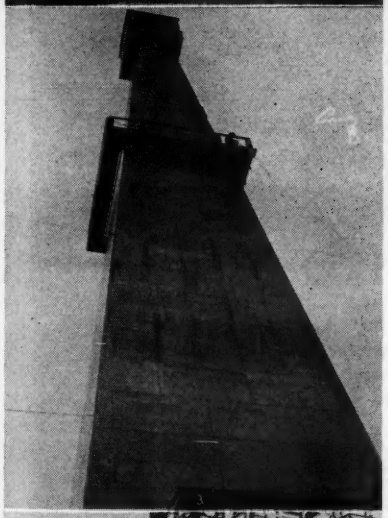
Catalogue No. 57 describing these new items is available on request

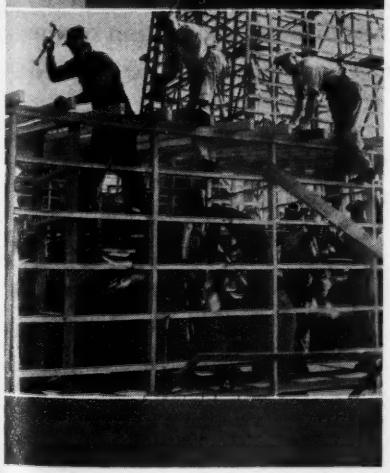
---

YOUNGSTOWN STEEL PRODUCTS CO. OF CALIF.

714 W. Olympic Blvd. - PRospect 7581 - Los Angeles, Calif.







1. Close-up of wooden framework around steel derrick prior to installation of rock wool.

2. The men on the job. Left to right: Harold S. Davis, foreman, construction and maintenance; Ross B. Chambers, division foreman, drilling; Melvin W. Sheppard, Jr., assistant to production manager; Samuel F. Bowlby, manager, Los Angeles Basin production division; Walter Elliott, general drilling superintendent; Albert S. Baptie, division superintendent; Robert J. Kettenburg, division engineer; Harrison Keith, drilling foreman; Robert F. Dawes, foreman; construction and maintenance; W. Beaton, Macco Construction Company.

3. Close-up of finished structure, derrick now enclosed in mineral board.

4. Shell crew constructing pump and motor house. Upper row: Arthur W. Rimel, head rig repairman; Arthur J. Barton, head rig repairman; Harry Hardy, carpenter. Lower row: Robert F. Dawes; Perry M. Baycroft, head rig repairman; Carl J. Hicks, rig repairman; Glen O. McGinnis, carpenter.

5. Thickness of the rock wool insulation is shown in this section being examined by Robert J. Kettenburg and Albert S. Baptie.

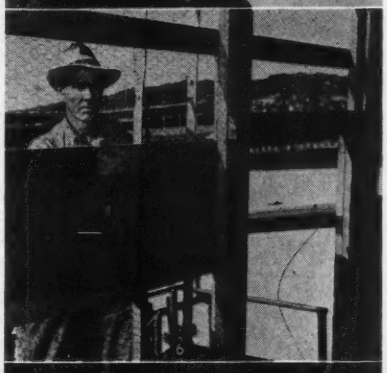
6. Perry M. Baycroft installs a 16"x48" pad of rock wool in a cell of the wooden framework. Chicken wire holds it in place on the inside. Transite mineral board in panels covering six cells is nailed on the outside.

7. Drilling is under way! Rotary Helper James W. Chilton is in the foreground, back to camera, partly hiding Rotary Helper Clarence E. Hillhouse. To right is Catheadman Winfield F. Sharp. Facing camera in rear is Driller Barton K. Eakin.

8. Derrickman Basil D. Looney scrapes bit cuttings from the mud circulating through the well.

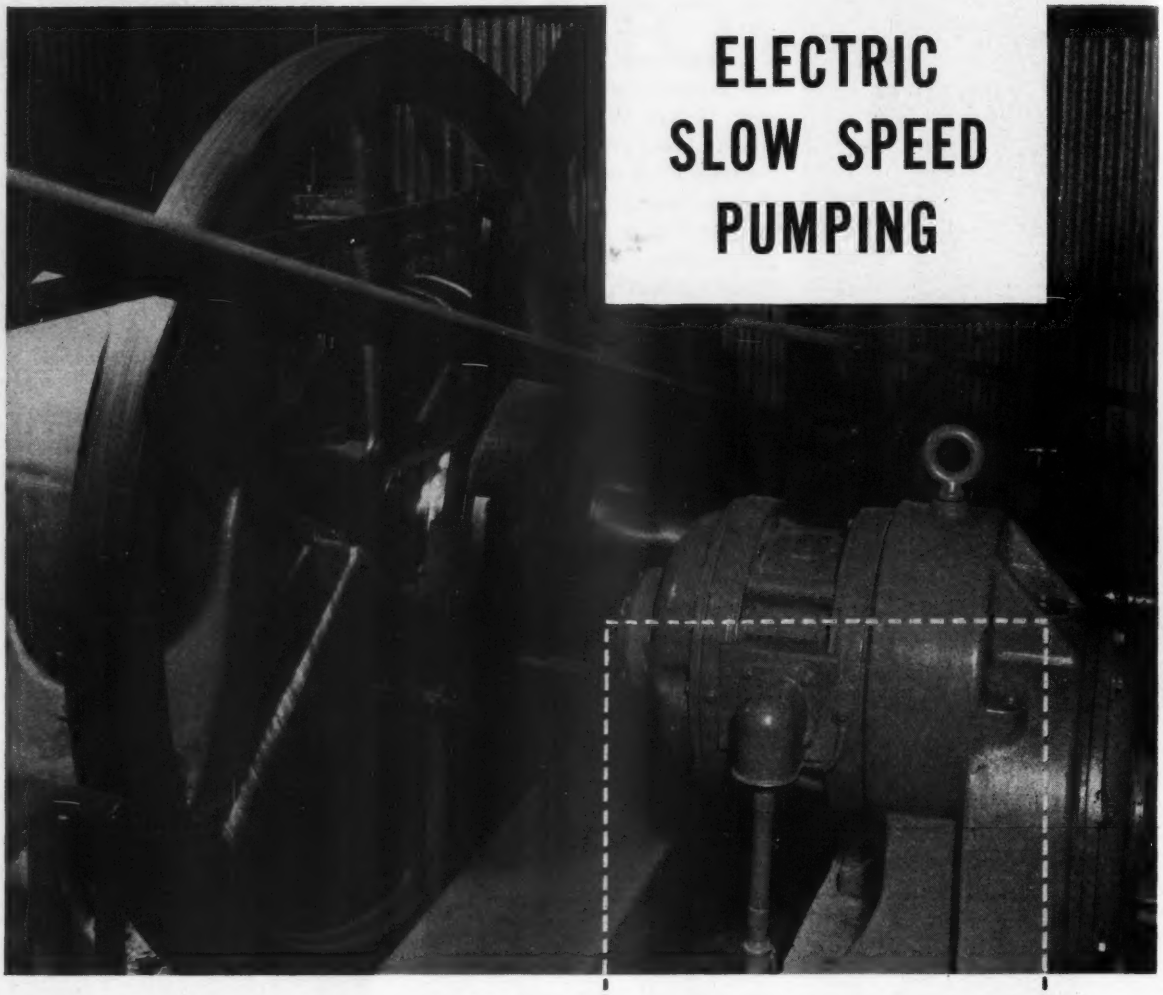
9. Harrison Keith, drilling foreman, checks on operation of mud pumps.

(Photos courtesy Shell News)



Do Better With Fewer Men... Use

ELECTRIC SLOW SPEED PUMPING



This little three H.P. motor delivers an ample, steady, dependable flow of power — replacing equipment of much greater power, size and operating expense.

Don't let the manpower shortage get you down. Meet the emergency with electric slow-speed pumping. You'll stay with it always because:

With electric slow-speed pumping, equipment stands up better. You can reduce the time of the well crew in repairing surface operating equipment.

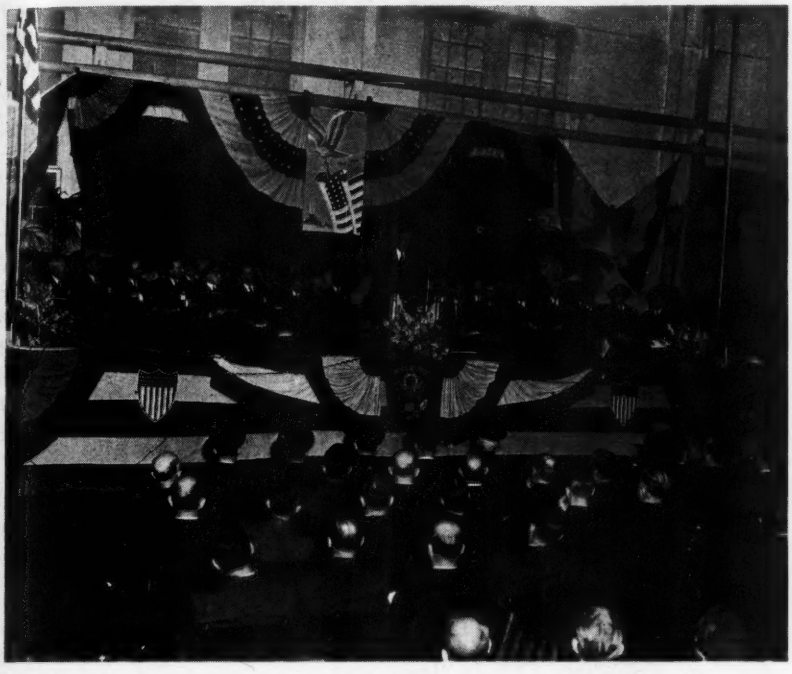
Electric slow-speed pumping means less supervision, easier operation.

Pump speed matches the production of the well—often steps up delivery—no wasted horsepower.

We have the evidence of these savings. Ask any Edison oil field engineer to point it out to you.

SOUTHERN CALIFORNIA EDISON COMPANY LTD.

gines and there is only a musical hum instead of the clinkety-clank usually associated with oil drilling. Even the hum of the motors has been confined by enclosing the power house in rock wool.



Governor Saltonstall of Massachusetts paid tribute to the National Supply Co. on their third production award.

The National Supply Company was the recipient of its third War Production Award on February 10th with the presentation of the Army-Navy "E" to the employees of its Toledo, Ohio, Plant. The two previous awards consisted of the Army-Navy "E" at the Ambridge, Pa., Plant and the U. S. Maritime Commission Victory Fleet Flag and Maritime M Pennant to the Superior Engine Division at Springfield, Ohio.

Presentation of the Toledo Plant Award flag was made to President A. E. Walker by Rear Admiral William C. Watts, U. S. N., retired. "We regard it as a token of partnership with those brave sailors and soldiers fighting in the far corners of the world to maintain the rights of free men," said Mr. Walker in his acceptance speech.

Col. Ernest O. Rudelius presented "E" pins to the four oldest employees of the plant whose tenure of service ranged from 44 to 51 years of continuous service. Pins were accepted in behalf of the employees by J. S. Biscay, President of The National Supply Unit, U.A.W.-C.I.O. "Our fighting sons will never falter if we do our part. Let us put on these pins in solemn compact with them," said Mr. Biscay.

Governor Saltonstall, Governor of Massachusetts, gave the principal address and paid tribute to the workers and management in declaring, "All of us are working together on the home front as well as on the battle front."

Following the ceremonies refreshments were served to over 2,000 workers and guests.

H. C. Hanna Dies Suddenly

The oil industry in California was shocked by the sudden death on February 18, 1943 of H. C. Hanna, manager of the El Segundo Refinery of Standard Oil Company of California.

Mr. Hanna, a true pioneer in the refining industry, had a wide circle of friends and was highly regarded by all.

Mr. Hanna was born in Franklin, Pa., August 15, 1883. He came to El Segundo in 1911, the year the refinery was started, his first employment was in the boiler shop department during the construction of the plant. Later he became refinery foreman in charge of operation.

January 1, 1922, Mr. Hanna became assistant superintendent and December 1, 1926, he was given the superintendency. January 1, 1931, he was promoted to manager, which position he held until his death. His entire experience with the Standard Oil Company of California was in El Segundo.

Mr. Hanna is survived by his wife, Margaret; two daughters, Mrs. Guy Curtis of San Gabriel and Mrs. Hector Dyer of Laguna Beach; and two sons, Henry Charles Hanna, Jr., a lieutenant in the U. S. Navy, and William Bell Hanna, an engineer with the Marine Shipbuilding Company in Sausalito; his mother, Mrs. Bertha Hanna of North Hollywood; three brothers, Lindsay Hanna of San Francisco, a Vice President and director of the Standard Oil Company; Don Hanna, New York, and Mark Hanna of North Hollywood, and sisters, Mrs. Francis Smith and Mrs. Merle M. Moore, of Richmond.

Postwar Readjustment of Industry Approved by PIWC

Problems of postwar readjustment of the petroleum industry were taken up at the February meeting of the Petroleum Industry War Council. A report submitted by Dr. Robert E. Wilson, chairman of its committee on petroleum economics, which proposed that a budget be created for a paid staff, to conduct studies was approved and adopted by PIWC. Dr. Wilson's report pointed out that some advance planning should be done by the industry as a whole regarding the many problems which will be faced at the end of the war, but that individual companies are now too engrossed with war problems to give much attention to this subject.

Norton McKean Elected President American Meter Co.

At a recent meeting of the Board of Directors of American Meter Company, Mr. Norton McKean was elected president to fill the vacancy caused by the recent death of Mr. Francis H. Payne. Mr. McKean was formerly vice president, treasurer and general manager.

Morton McKean

Elected vice presidents were John C. Diehl, formerly chief engineer, with headquarters in Erie, Pa., and Arthur E. Norton, formerly manager of the company's factory in Boston. Mr. Diehl was also appointed to serve as manager of the Metric Metal Works plant in Erie, Pa. A. McW. Wolfe, the assistant manager in Boston, was promoted to the managership of the Boston plant serving the New England area.

Mr. Calvin A. Nichols, controller and assistant treasurer, has been made acting treasurer.

Arthur F. Benson, formerly assistant chief engineer, was promoted to chief engineer of the company.

Mr. McKean first joined American Meter Company in July, 1913, in Boston, Mass. He advanced to several positions of responsibility before he was made manager of the Albany plant in January, 1928. He has been a director since April, 1932, became general manager in 1936, vice president in 1937, and added the duties of treasurer in 1938. He is a member of the American Gas Association, the Association of Gas Appliance and Equipment Manufacturers, the New England Gas Association, New Jersey Gas Association, and Southern Gas Association.

Mr. McKean is a director of the State Bank of Albany. He has taken an active part in the business and civic affairs of Albany, having served since 1938 as president of the Board of Trustees of Memorial Hospital. He was campaign manager of the Albany Community Chest Fund in 1940, and its president in 1941 and 1942. A past president and director of the Albany Rotary Club, he is also director of the Albany Chamber of Commerce, a trustee of the Trinity Institution of Albany, and director of the Fort Orange Club since 1937. He is a member of the Schuyler Meadows Club, Fort Orange Club, and Albany Country Club of Albany, Engineers' Club of New York, and a member of the Rising Sun No. 31 Masonic Lodge, Nashua, N. H.

Howard F. Stover Elected Director National Ass'n of Manufacturers

The National Association of Manufacturers has just announced the election to its board of directors, of Howard F. Stover, of Tulsa, Oklahoma, who will serve on its board as National Director from Oklahoma.

Mr. Stover is secretary-treasurer of the Gaso Pump & Burner Manufacturing Company, of Tulsa, leading specialists in the manufacture of pipe line pumps for the oil industry. He has been for many years active in organization activities in the industrial field, these activities including service as president of the Tulsa Purchasing Agents' Association, and as a National Director of the National Purchasing Agents' Association.

Engineering, Technology, latest news—twice a month in California Oil World.

Youngstown Issues New Price List

The Youngstown Sheet and Tube Company has issued a new price list dated February 1, 1943, covering Youngstown Seamless Oil Country Tubuar Goods consisting of new standard sizes and weights published by The American Petroleum Institute in their new specification, and as listed by The American Iron and Steel Institute in their latest specification. The technical men of these two groups in cooperation with the oil and gas producing industries and with the assistance of Mr. Joyce of the National Emergency Standard Specifications Division of the War Production Board adopted these new standard sizes and weights.

The old schedule contained a total of 331 items, while the new schedule contains but 188 items, showing a reduction of 143 items.

This standardization and elimination program has been under study by various interested agencies for more than two years, and the very substantial reduction in the number of sizes and weights will make it possible to operate with smaller inventories, thereby making additional steel available for other important war purposes. This elimination of sizes and weights and standardization effort will result in substantial savings in the cost of drilling oil and gas wells.

Howard F. Stover

THIS LAUGH

OFF!!

Matt Weinstock, in the L. A. Daily News, tells this one:

The head of an L. A. Industrial firm received a mandatory order that would have crippled his plant. He appealed to the WPB. Nothing happened. He followed through with this telegraphic prayer (which brought an instant response):

"Our father who are in Washington, hallowed be thy name, Thy orders come, they will be done, out west as it is in Washington. Give us this day our authorization, and permit us to operate so we may forgive those who close our plant against us. Please do not add to the hardship but deliver us from red tape, for you have the power to keep our country in glory, forever and ever, amen."

Said the brassiere to the hat—"You go on ahead. I'll carry the bags."

A pat on the back develops character . . . if administered young enough, often enough, and low enough.

He also asks why Hitler sleeps upstairs now? The answer is tnat his bed is up there.

A contributor tells of a married man who was puzzled when one of his friends called him to account for neglecting his wife.

"What in the world is the trouble?" asked the friend. "You used to be madly in love with her. Don't you care for her any more?"

"I surely do," said the husband.

"Well, if you love her, how does it come that you haven't spoken to her for the last 15 years?"

"Oh, that," said the husband. "The fact is, I hate to interrupt her."

A fellow got on the London bus carrying a hundred-pound bomb and sat down.

"What's that you've got on your lap?" asked the conductor.

"It's a delayed action bomb I'm taking to the police station," came the answer.

"Lumme," said the conductor, "you don't want to carry a thing like that on your lap. Put it under the seat!"

Little Tommy had spent his first day at school. Mother was anxious to know how he got on. "What did you learn, dear?" she asked.

"Didn't learn nothin'" came the reply.

"Well, then what did you do?"

"Didn't do nothin'. A woman wanted to know how to spell 'dog' and I told 'er. That's all.

There's a story going around about the Jap prisoner who asked an American sailor why the American Navy always wins in major engagements.

"That's because we pray before we start fighting," said the sailor.

"But so do we," protested the Jap.

"Yeah," replied the gob, "but who can understand you guys?"

He ordered two dozen roses to be sent to his loved one on her 24th birthday. "A rose for every precious year of your life," his card read.

The florist threw in an extra dozen because the young fellow was one of his best customers.

And the wedding hasn't taken place yet.

"Thank heavens this is still a free country where a man can do as his wife pleases!".

Sismo Sam sez—"A moron is a guy that would marry Betty Grable for her money."

"Say, do you know what little fairies sit on?"

"Yes, fairy tales."

Faithfully Yours!

There are two obvious reasons for the low cost and faithful performance of JENSEN Pumping Units: volume and experience. We are the largest exclusive manufacturer of pumping equipment in the business—and the oldest. It is our studied opinion that no man in the oil business can now afford to pump a well with anything but a JENSEN JACK. We're ready with reasons—ask for 'em!

California Representative
A. V. TURNER
445 W. 6th.
Downey, Calif.
Phone: Downey 47478

Stocked by
THE OIL TOOL CORPORATION
3075 Cherry Avenue
Long Beach, Calif.
Phone: 421-81

JENSEN
BROTHERS MFG. CO.
Coffeyville, Kansas, U.S.A.

EXPORT OFFICE: 50 Church St., New York City

Scenes in new, enlarged precision manufacturing plant of Technical Oil Tool Corporation, Ltd. Upper: Portion of parts production department. Lower: Diamond tipped cutting tools for use on the precision machines are made in this department.

Technical Oil Tool Expands

Marking a ten-fold increase in both personnel and manufacturing capacity, Technical Oil Tool Corporation, Ltd., has consolidated and expanded its facilities and is now converted to the manufacture of certain precision instruments necessary in war. One plant now houses the entire manufacturing organization which was formerly located in three separate precision laboratories.

The new plant, located at 1057 North La Brea Avenue, Los Angeles, is completely equipped for the designing, manufacturing and assemblying of precision devices on a quantity production basis. There are more than forty individual benches equipped with small precision lathes, turret lathes, milling machines, gear cutters and special machine tools, all capable of working to the smallest tolerances. Each bench has an array of special hand tools necessary in this type of work. The major portion of the plant is served by a thermostatic temperature control system.

Because of the extremely close dimensions and high finish demanded on the various parts, a diamond tool-making department is maintained to furnish the large quantity of these highly precise cutting tools required.

To check the concentricity, contour and lineal and angular measurements of finished parts an optical test room has been installed. In addition, there are two grinding rooms, a heat treating department, and a machine shop section equipped with a wide range of larger machines and equipment. A special experimental department, now being equipped, includes facilities for testing materials and instruments at temperatures as low as minus 70° F.

A portion of the new plant and an experienced staff of technicians are allocated to the maintenance of Totco Recorders and equipment for Controlled Vertical Drilling, and other products of the Company used by the oil industry. According to J. B. Wood, president of Technical Oil Tool Corporation, Ltd., development work on several new technical devices is also being continued, although some delay has been occasioned by the readjustment of facilities to "Victory" work.

Three G-E Men Receive Awards

Three General Electric men received awards at the national technical meeting of the American Institute of Electrical Engineers held the latter part of January. The men honored were Dr. G. Wesley Dunlap, Gerard Swope and Dr. Willis R. Whitney, honorary vice president and founder of the company's research laboratory.

Mr. Swope was the sixth recipient of the Hoover Medal, awarded jointly by the American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers and American Institute of Electrical Engineers. The award is to engineers "whose preeminent services have advanced the well being of mankind and whose talents have been devoted to the development of a richer and more enduring civilization."

The John Fritz Medal was awarded by the same four societies to Dr. Whitney for "distinguished research, both as an individual investigator and as an outstanding and inspiring administrator of pioneering enterprise, co-ordinating pure science with the service of society through industry."

The Alfred Noble prize was awarded to Dr. Dunlap by these four organizations and the Western Society of Engineers for his paper on "The Recovery Voltage Analyzer for Determination of Circuit Recovery Characteristics," published in Electrical Engineering, November, 1941. The award is made for a technical paper of exceptional merit, and the author must be less than 31 years old when the paper is submitted.

At Western Gear Army-Navy "E" award ceremony Capt. Samuel P. Ginder, U.S.N., who made "E" pennant presentation; Brig. Gen. Eley B. Denson; Philip L. Bannan, Sr., president of Western Gear Works; Thos. J. Bannan, executive vice president of the company.

A novel and highly successful way of boosting morale through celebrating the award of the Army-Navy "E" flag, was a "family luncheon" at the Western Gear Works, Seattle, Wash., on February 6th.

This unusual event featured employee musical talent, group singing, and introduction of outstanding employees. Highlight of the program was the presentation of a "Victory pledge" to Thos. J. Bannan, executive vice president of the company, by worker Frank Cunningham, representing the entire personnel.

The voluntary pledge, inspired as an expression of appreciation to the management, was instigated and signed by every employee of the Western Gear Works. It promised a "supreme effort for final victory."

Chas. F. Bannan was master of ceremonies at the luncheon program, which was attended by all workers and their families. At the formal presentation ceremony, following the "family luncheon," Philip L. Bannan, Sr., of San Francisco, president of the company, received the efficiency pennant from Captain Samuel P. Ginder, U.S.N., Commanding Officer, Naval Air Station at Sand Point and Commanding Officer, Air Control Center, Seattle. Brig. Gen. Eley P. Denson, Commanding General, Seattle Port of Embarkation, presented the "E" pin to representative workers.

The Pacific Gear and Tool Works, established in San Francisco 50 years ago and incorporated in 1903, is the original company of four related plants operated by members of the Bannan family on the Pacific Coast: Western Gear Works, Seattle; Western Gear Works, California Division, Lynwood, Calif.; and Pacific Gear Works, Vernon, California. Expansion of the Seattle and Vernon plants since Pearl Harbor has been extensive to keep pace with orders for ship and airplane gears, as well as gears for other war industries. This expansion and resultant increased production has been rewarded now with the Army-Navy "E" pennant.

The award ceremony was broadcast on the Blue Network in Portland, San Francisco, and Los Angeles.

Dr. ZoBell Addresses A.A.P.G.

Dr. Claude E. ZoBell, Associate Professor of microbiology and assistant to the Director, Scripps Institution of Oceanography, has given a challenge to the petroleum geologists and engineers of Southern California. He is inclined to believe that evidence from the California oil fields may hold the key to the question of how oil was formed.

AVOID UNNECESSARY EXPENSES

Many operators still follow the trial and error method of operating their pumping wells. If you have wells which are not producing as you think they should, have us test them to determine their true condition before attempting remedial work. Otherwise you may do useless work and pile up unnecessary expenses. Depthograph tests will indicate the shortest road to your trouble.

Depthograph fluid level, bottom - hole pressure and potential tests are accurate and in most cases they can be made without stopping the pump. All that is required is an accessible 2-inch connection into the casing head.

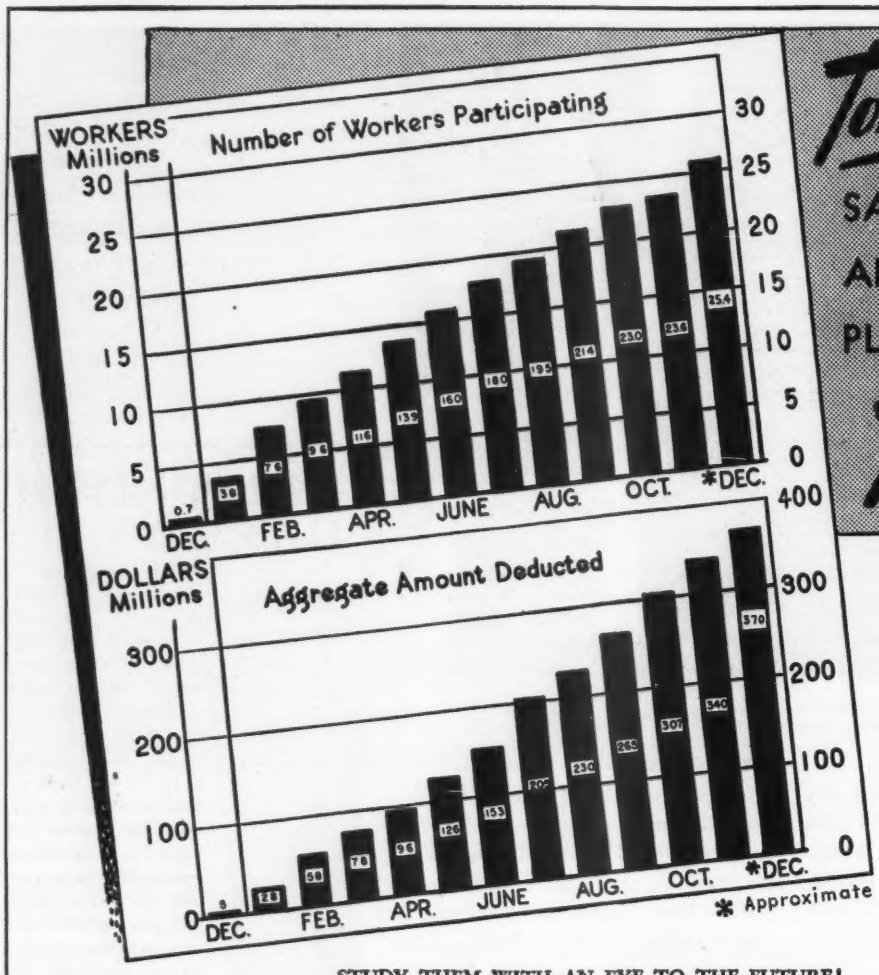
For information and service call SYcamore (Pasadena) 9-3388.

DEPTHOGRAPH COMPANY

ORIGINATOR AND PIONEER OF REFLECTION WELL TESTING

2824 CARLARIS ROAD
SAN MARINO, CALIF.

POST OFFICE BOX NO. 1
GREAT BEND, KANSAS



Tomorrow's SALES CURVES ARE BEING PLOTTED . . . Today

THESE CHARTS SHOW ESTIMATED PARTICIPATION IN PAYROLL SAVINGS PLANS FOR WAR SAVINGS BONDS *(Members of Armed Forces Included Starting August 1942)*

STUDY THEM WITH AN EYE TO THE FUTURE!

There is more to these charts than meets the eye. Not seen, but clearly projected into the future, is the sales curve of tomorrow. Here is the thrilling story of over 25,000,000 American workers who are today voluntarily saving close to FOUR AND A HALF BILLION DOLLARS per year in War Bonds through the Payroll Savings Plan.

Think what this money will buy in the way of guns and tanks and planes for Victory today—*and mountains of brand new consumer goods tomorrow.* Remember, too, that War Bond money grows in value every year it is saved, until at maturity it returns $4 for every $3 invested!

Here indeed is a solid foundation for the peace-time business that will follow victory. At the same time, it is a real tribute to the voluntary American way of meeting emergencies that has seen us through every crisis in our history.

But there is still more to be done. As our armed forces continue to press the attack in all quarters of the globe, as war costs mount, so must the record of our savings keep pace.

Clearly, on charts like these, tomorrow's Victory —*and tomorrow's sales curves*—are being plotted today by 50,000,000 Americans who now hold WAR BONDS.

EVERYBODY EVERY PAYDAY AT LEAST 10%

Save with War Savings Bonds

This space is a contribution to America's all-out war effort by

CALIFORNIA OIL WORLD

Field Development

Los Angeles Basin

Orange County Wildcats Increased

Wildcatting in Orange county is on the upgrade with two new projects announced this week. Newest under way is Signal Oil & Gas Co.'s Irvine No. 1, rig for which is being built near the east limits of Corona Del Mar and Coast Highway. This wildcat is on high lands above Balboa Bay.

In the Newport Beach area D. W. Elliott is grading roads to the site of Townsend Land Co. No. 1 near the east quarter corner of sec. 20, 6s-10w.

Previously reported wells now working are: The Texas Co.'s Buena Park Unit No. 5-J-1, drilling at 7135 ft. in the Buena Park area; Chas. W. Camp's shallow test No. 25, drilling in the grass roots near Costa Mesa; J. E. F. Oil Co.'s Larson No. 1, making hole at 2000 ft. in the Stanton area and Richfield Oil Corp.'s Huntington Beach outpost Werick No. 1 for which rig is up near the southwest corner of sec. 7, 6s-10w.

Two Redrills On In West Dominguez

Two strings are at work in the westerly section of the Dominguez field with the object of redrilling the 7th & 8th Callendar zones. Both workovers were occasioned by casing collapsed during earthquake movement along a fault many months ago. First under way was Union Oil Co.'s Austin No. 1, now fishing casing to redrill, which was followed by R. E. Havenstrites Larronde No. 2 ,immediately to the south.

New Del Valle Zone Producing

R. E. Havenstrite, Operator's Barnes No. 2 on sec. 16-4n-17w of the Del Valle field, prospected the field to 9875 ft. and is completed in the newly discovered Bering Zone. After a long series of continuous tests the well was finished in the gun perforated intervals 7900-7975 ft. and 7990-8065 ft. flowing 752 bbls. of clean 44 gravity oil and 580,000 cu. ft. of gas through a 24/64 in. bean. At last report the flow had increased to 916 bbls. per day through the same sized orifice.

On section 18 Herley Kelley gun perforated its 5973 ft. Handy No. 1 in the Vasquez and Videgain zones. Failing to flow the well is now being rigged to pump. Standard Oil Co. is grading for its fifth well on the Sepulveda lease in sec. 17-4n-17w.

Chatsworth Well Drilling Ahead

J. Paul Getty's Chatsworth area try, Foothill Orchards No. 1, is drilling ahead in gray sand at 2382 ft. Located in sec. 6-2n-15w near the Reservoir, the well is in an area long considered by many to offer good chances at production.

LOS ANGELES BASIN WILDCATS

Area	Well	No.	Section	Depth	Status
Chatsworth	J. Paul Getty, Foothill Orchards	1	6, 2-15	2382	Drilling
Las Llajas	West'n Gulf Oil Co., Brady	1	13, 3-17	7700	Stdg. Cem.
L. A. City	Schirm & Rubenstein H-S	1	24, 1-13	3919	Idle
	Shell Oil Co., Inc., Verne Comm.	1	21. 1-14	4020	Drilling
Newhall	Aztec Oil Co., Sanborn	1	6, 3-16	7327	Idle
	James C. Brazell, Perkins	1	11, 3-16	4473	Idle
	So. Calif. Pet. Corp., Lassalle 44-1		3, 3-16	5074	Drilling
Puente	Barry Oil Co. Inc., Roland	1	14, 2-10	2423	Testing
	Melvin Hansen, Dragna	1	24, 2-10	2840	Idle
Rio Hondo	Potrero Oil Co., Newman	1	32, 1-11	7111	Sidetracking
Whittier-La Habra	Los Nietos Valley Oil Co., Woodward	1	29, 2-11	3600	Idle
	H. & C. Oil Co., Joyce	1	22, 2-11	5200	Fishing D. P.
	Orange County				
Buena Park	The Texas Co., B.P.U. 5-J-1		31, 3-10	7135	Drilling
Corona Del Mar	Signal Oil & Gas Co., Irvine	1	6, 7-9		Bldg. Rig
Costa Mesa	Chas. W. Camp	25	15, 6-10	50	Drilling
Huntington Beach	Richfield Oil Corp., Weirick	1	7, 6-10		Rig
Stanton	J E. F. Oil Co., Well	1	23, 4-11	2034	Drilling
	San Bernardino County				
Carbon Canyon	Stella, E. F., McDermont	2	5, 3-8	1173	Bailing
Colton	Supreme Oil Co., Well	1	2, 2-4	766	Idle

Basin Wildcat Yet Continues

The Texas Co.'s McNally No. A-3 on sec. 22-3s-11w is drilling at 6972 ft. This is the third company attempt at discovering deep production west of the West Coyote field with its predecessors going as deep as 9600 ft. No markers have yet been announced but dead reckoning places the bottom near or in the Repetto.

In the adjacent West Coyote field Standard Oil Co. completed Murphy-Coyote No. 131 at 5975 ft. flowing a 735 bbl. daily rate of 28.9 gravity oil and 1,066,000 cu. ft. of gas through a ½ in. bean. The company has located No. 132 and received permission to drill.

Graham-Loftus Starts East Coyote Program

Graham-Loftus Oil Corp. is preparing to start a three well program in the East Coyote field. The wells, on sections 13 & 18-3s-10w, will be Perkins No.'s 4, 5 & 6. Union Oil Co. is preparing to drill Hole No. 25 while Bartholomae Oil Corp. is yet making pump tests on Stern No. 12 from plugged depth of 6127 ft.

Protection String In Las Llajas Cat

Western Gulf Oil Co. set 9⅝ in. protective casing in its 7700 ft. exploratory Brady Estates No. 1 on sec. 13-3n-17w, some two miles southeast of the Pico Canyon field of Los Angeles county. In the nearby Newhall area So. Calif. Pet. Corp.'s Lassalle No. 44-1 in Weldon Canyon is drilling ahead at 5074 ft.

Puente Well Shows Promise

Barry Oil Co.'s Billy Rowland No. 1 on sec. 14-2s-10w, near the highway and just west of the town of Puente, has indicated considerable promise. Currently testing water shut off on a c.p. job over the zone, the well cored good permeable appearing oil sands from 2385 ft. to bottom at 2423 ft.

Soviet Engineers Direct Refinery Dismantling

Dismantling work under way at the Douglas Oil and Refining Company plant at Wilmington, is about 35 per cent complete. This plant was sold late in 1942 and will be dismantled and moved to Russia. Dismantling work is being done under supervision of Russian engineers.

FOR SALE

At farm land prices, 120 acres Tulare county potential oil land. Advertiser Box, care California Oil World, 939 So. Broadway, Los Angeles, Calif. 4-5d

J. P. Butler

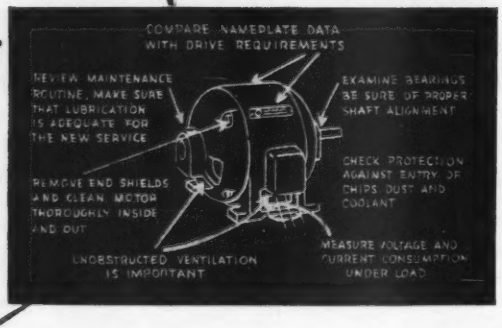
COLLECTIONS • CREDITS • ACCOUNTING

Select your collection and credit representative as carefully as you would your bank; both handle your money.

603 Rives Strong Bldg. VAndike 6149
112 W. 9th St., Los Angeles, Calif.

IT'S TIME TO BE A CRANK ABOUT

MOTOR CARE


COMPARE NAMEPLATE DATA WITH DRIVE REQUIREMENTS
REVIEW MAINTENANCE ROUTINE, MAKE SURE THAT LUBRICATION IS ADEQUATE FOR THE NEW SERVICE
EXAMINE BEARINGS BE SURE OF PROPER SHAFT ALIGNMENT
CHECK PROTECTION AGAINST ENTRY OF CHIPS, DUST AND COOLANT
REMOVE END SHIELDS AND CLEAN MOTOR THOROUGHLY INSIDE AND OUT
UNOBSTRUCTED VENTILATION IS IMPORTANT
MEASURE VOLTAGE AND CURRENT CONSUMPTION UNDER LOAD

PROTECT YOUR PRODUCTION WITH THIS MAINTENANCE PLAN

1 Make sure that motors are selected to *match the job.* Install motors so they are properly aligned with the driven load and are easily accessible for regular inspection.

2 Keep motors free from dust and dirt. Establish a definite cleaning schedule.

3 Be sure that lubrication is frequent enough to take care of increased production. See that employees are instructed as to proper methods.

4 A general overhauling of hard-worked motors will add years to their life. If your motors haven't had an overhaul in the last year, try to arrange your schedule to permit one.

SEE—"HOW TO CARE FOR MOTORS"

Every supervisor and maintenance man will find this book of value . . . it tells what to do to get the most out of motors, old or new. If you're setting up a maintenance program to keep up with today's unprecedented demands, or if you're "switching" motors from one job to another, or equipping machines with new motors, you'll find this booklet of helpful motor facts will save you time. Send the coupon.

General Electric, Sec. G750-185
Schenectady, N. Y.

Yes, send me a copy of "How to Care for Motors," GEA-2856A.

Name .....
Title .....
Company .....
Address .....
City ..... State .....

8030

GENERAL ELECTRIC

Coastal District

Northern Counties Projects Active

Development of gas resources in the Rio Vista Gas field was resumed this week when Standard Oil Co. spudded Perry Anderson No. 5 on sec. 35-4n-2e and staked location for State No. 4 on sec. 12-3n-2e. Other companies preparing to drill in the field are The Texas Co. with Welch No. 3 on sec. 32-4n-3e and Amerada Pet. Corp. with Kuhn Community No. 2 in sec. 28-4n-3e.

San Joaquin County has two immediately scheduled tests. First to get under way will be Amerada Pet. Corp.'s Lodi Comm. No. 9-1 which is rigging up on sec. 9-4n-7e. On acreage related to the play, Bankline Oil Co. will put down Community No. 1-1 near the town of Galt on sec. 1-4n-6e.

In the Ciervo area of San Benito county, Union Oil Co.'s Friedman No. 1 swabbed water and gas from 3850 ft. to the plug at 6006 ft. and was last reported plugged at 3820 ft.

In the Edna area of San Luis Obispo county Los Nietos Co.'s Holmes No. 1, sec. 6-32s-13e, is drilling in hard shale and chert at 3313 ft. after a formation test at 2867 ft. recovered only gassy mud. On sec. 35-31s-14e of the county Western Gulf Oil Co.'s Huasna Comm. No. 1 is redrilling to straighten hole after reaching only 441 ft.

Amerada Pet. Corp.'s Dixon area wildcat in Solano county is drilling in unreported formation at 3925 ft. The well, called Starkey Fee No. 1, is located on sec. 2-6n-2e.

Butte county has two drillers at work. In the Dodgeland area on sec. 30-20n-1e Superior Oil Co.'s Dodgeland Co. No. 1 is drilling in shale at 7605 ft. after shutting off troublesome water while in the Cana area on sec. 11-23n-1w Pacific Western Oil Corp. & Geo. F. Getty, Inc. are drilling Cana No. 1 in hard sand at 6800 ft. No showings have yet been reported in either project.

D. D. Feldman's Unit Plan No. 1 on sec. 8-7n-6e in the Elk Grove section of Sacramento county is on the hook at 4518 ft. after bottoming in shale and gray sand.

Lloyd Completes Ventura Ave. Well

Lloyd Corporation finished No. 9 at the north flank of the Ventura Avenue field from 10016 ft. flowing an 1100 bbl. daily rate of clean 33 gravity oil. Shell Oil Co., Inc.'s Taylor No.'s 158 & 159 are in oil sand zones at 8400 & 9600 ft. respectively.

Seaboard Finishes Shiells Cyn. Pumper

Seaboard Oil Co. completed Calumet No. 1 on sec. 10-3n-19w at 3292 ft. pumping more than 100 bbls. of 34 gravity oil daily. At last report the well was beginning to clean up with the gauge being 77 bbls. net with a cut of 32.0% mud. The company is rigging up to drill No. 2 on section 3 of the township.

Bardsdale Well Now Completed

Carrie Estelle Doheny, Lucy Smith Batson & Los Nietos Co. Elkins No. 1 on sec. 6-3n-19 wwas finished from 40 ft. of perforation above the plug at 4919 ft. flowing a steady 125 bbl. rate under wraps. The second day's production was 119 bbls. of 29.1 gravity oil with a 3.0% cut through a 10/64 in. bean. Pressures were 50/275 pounds.

Los Olivos Well Setting Casing

Tide Water Assoc. Oil Co. is preparing to set casing and attempt production in its second Los Olivos area well, Chamberlin No. 1. Located on sec. 33-8n-31w, the well entered the heavy oil producing chert zone at 3685 ft. and bottomed at 4430 ft.

COASTAL COUNTIES WILDCATS

Area	Well	No.	Section	Depth	Status
	Santa Barbara County				
Cat Canyon	Bel-Air Oil Co., Williams	1	25, 9-33	6291	Abandoning
	Standard Oil Co. SBLC	1	15, 9-33	7250	Rigging Pump
Gato Ridge	General Pet. Corp. Wickeden	2	24, 8-32		Foundation
Goleta	Del Mar Oil Co., Rowe	1	11, 4-28	2950	Drilling
Lompoc	Alphonzo E. Bell Corp., Lompoc	6	28, 8-34	4560	Drilling
	Fickert Oil Co., Ltd., Well	1	8, 7-33		Rig
Los Olivos	TideWater A. O. Co. Chamberlin	1	33, 8-31	4430	Drilling
	Ventura County				
Bardsdale	Los Nietos Co., Elkins	1	6, 3-19	5681	Completed
	San Marino Oil Co., Elkins	1	7, 3-19		Rig
Conejo	L. A. Basin Oil Co. Well	1	4, 1-20	1745	Idle
	Sycamore Oil Co., Boylan	1	23, 1-20	2747	Idle
Ojai	Coates, Spencer D., Pirie	5	7, 4-22	1033	Idle
Piru	Continental Oil Co., Holser	2	14, 4-18	4525	Drilling
	Delroy Pet. Corp., Fisk C. H.		22, 5-18	2802	Idle
	Pac. West. O. Corp. Temescal	15	4, 4-18	3192	Completed
	T.W.A. Oil Co., Hidden	2	5, 4-18	3992	Drilling
Sespe	McCaslin, W. E., Burson	1	19, 4-19	2039	Idle
	Volunteer Pet. Co., Tar Creek	3	28, 5-19	540	Idle
Timber Canyon	Crude Oils, Inc., West	1	19, 4-20	958	Idle
	Fletcher & Babcock O'Leary	1	29, 4-20		Location

NORTHERN COUNTIES WILDCATS

County	Well	No.	Section	Depth	Status
Butte	Pac. West'n & Getty Cana	1	11,23n-1w	6800	Drilling
	Superior Oil Co., Dodge Land	1	30,20n-1e	7605	Drilling
Monterey	Loma Grande Oil Co., Corey	1	23,24s-10e	4318	Idle
	Columbia Oil Co., Vierra	1	7, 13s-2e		Rig
Sacramento	D. D. Feldman, Unit Plan	1	8, 7n-6e	4518	Abandoned
	Richfield Oil Corp. Natomas	1	17, 10n-4e		Grade
San Benito	Union Oil Co., Friedman	1	13,16s-11e	6370	Testing
San Joaquin	Amerada Pet. Corp., Lodi Com.	9-1	9, 4n-7e		Rigging Up
	Bankline Oil Co., Comm.	1-1	1, 4n16e		Locaation
	Standard Oil Co., Blewett Com.	3	23, 3s-6e		Rig
San Luis Obispo	W'n Gulf Oil Co., Huasna Comm	1	35, 31s-14e	441	Drilling
Solano	Los Nietos Co., Holmes	1	6, 32s-14e	3313	Drilling
	Amerada Pet. Corp. Starkey Fee	1	2, 6n-2e	3925	Drilling

W. R. Gerard Well Makes Good Flow

W. R. Gerard's Gerard-Acquistapace No. 1 on sec. 22-10n-34w at the north flank of the Santa Maria Valley field was officially completed to confirm the exceptional results indicated by preliminary completion tests. Bottomed at 4379 ft. the well was swabbed in through the casing —making all gas for the first 8 hours then turning to oil—for an initial 1200 bbl. daily rate. The 18.5 gravity oil was produced through a 40/64 in. bean under 470 lbs. pressure along with 2,000,000 cu. ft. of good gas. Beaned to a 10/64 in. orifice the well made 300 bbls. daily and 350,000 cu. ft .of gas.

Union Oil Co.'s Bradley Lands No. 2-2 was completed at 5043 ft. on sec. 36-10n-34w pumping 434 bbls. of clean 11.9 gravity oil daily. The company's Cox No. 1, sec. 29-10n-34w, entered Franciscan shale at 2250 ft. and was abandoned at 2400 ft.

PACIFIC

Beam Balanced Pumping Unit

for Economy

PACIFIC MODEL B-30-LFO-6

This is our standard 28,000 inch pound peak torque unit with 6,000 pound walking beam, API ratings. Note the rigid bracing and sturdy construction. Assembly includes Pacific Safety Brake.

PACIFIC GEAR WORKS 2053 E. 38 ST. LOS ANGELES

ASSOCIATED COMPANIES

WESTERN GEAR WORKS—Lynwood, California
PACIFIC GEAR & TOOL WORKS—San Francisco
WESTERN GEAR WORKS—Seattle, Washington

Rig Pump On Cat Canyon Try

Standard Oil Co. is rigging pump to try South Basin-Lloyd Comm. No. 1 after the 7250 ft. test was plugged and redrilled to 4705 ft. for shallow trial. Formation tests indicate the posibility of small heavy oil production.

Appeals Court on War Agency Orders Set Up

A Congressional "court of appeals" has been set up to receive complaints against any order or directive issued by any Federal department or agency including WPB, OPA, PAW and other agencies whether set up by law or executive order. This action was taken on February 11 when the House, by a vote of 294 to 50 adopted House Resolution 102 by Representative Smith, Virginia. During debate there was criticism of Federal administrative agencies generally, and OPA in particular, for "stretching" their authority and ignoring requirements of law.

Under the Smith resolution the committee is authorized to investigate complaints against any administrative action to see if it—1. Is beyond the scope of the power or authority granted to such department or independent agency by Congress or by Executive Order. 2. Invades the constitutional rights, privileges, or immunities of citizens of the United States. 3. Inflicts penalties for failure to comply with such rules, regulations, or directives without affording those accused of violation an opportunity to present their defense before a fair and impartial tribunal.

Buy War Bonds

San Joaquin Valley

Antelope Hills Outpost Fails

Shell Oil Co., Inc. failed to extend the producing limits of the Antelope Hills field to sec. 31-27s-20e when Hopkins Fee No. 78-31 was abandoned in gray sand at 3013 ft. The top of the barren 23-6 sand was placed at 2620 ft. with the 45-6 sand found at 2660 ft.

In the field the company completed Williams No. 66-6 at an effective 2200 ft. pumping 85 bbls. daily and is drilling No. 75-6 at 1629 ft. The Texas Co.'s Voight No. 74-6 was last reported running an electric log after bottoming at 3012 ft.

Guijarral Hills Wildcat Completed

Formation results indicating a major discovery in Standard Oil Co.'s Pleasant Valley No. 82-29F were confirmed when the well completed at 9151 ft. flowing 819 bbls. of clean 28.5 gravity oil through a 36/64 in. bean. Eocene sands were cored from 8942-9141 ft. which are stratigraphically different than those producing in the Coalinga Eocene Pool only a mile and a half to the northwest.

Immediate development is scheduled by the company with No.'s 62 and 64 in the discovery section 29-20s-16e and No. 28 location on sec. 21-20s-16e. Also entering the play is R. S. Lytle with No. 88-20F in the southeast corner of sec. 20-20s-16e.

Jacalitos Flanks To Be Explored

Standard Oil Co. is preparing to drill south and northwest of the Jacalitos Hills field in Fresno county. The company is building rig for No. 61-35 on sec. 35-21s-15e, immediately south of production and has scheduled No. 67-17 on sec. 17-21s-15e, some two miles northwest of present producing limits.

Di Giorgio Continues Mountain View Work

Di Giorgio Fruit Corp. which seeks production in the Mountain View area is drilling No. 3 at 860 ft. on sec. 7-31s-30e after its predecessors failed to find saturated sand. The company is planning to continue its search nearer the field with No. 4 already located at the center of sec. 10-31s-29e.

Mendota Well To Make Tests

The Texas Co.'s Gill No. 38-16, sec. 16-13s-16e, bottomed in Diabase at 9154 ft. and cemented 7 in. casing at 7967 ft. to gun perforate and test Eocene sands located on the way down.

Poscuncula Area Trial Under Way

In what is sometimes referred to as the Canfield Ranch area, east of the Ten Section field, Shell Oil Co., Inc.'s KCL-Posuncula B No. 84-27 is drilling at 3480 ft. The test is located near the small 25 gravity production which Standard Oil Co. effected from 60 ft. of Stevens sand above 8072 ft. in 1938.

U. S. Navy Starts Elk Hills Work

The United States Navy, which curtailed all Elk Hills deep production in favor of immediate shallow heavy oil development, staked eight locations as the first of an extensive series. The present program falls on section 1 & 2, 31s-24e and sections 27 & 34, 30s-24e. It is reported that an operating agreement has been reached wherein Standard Oil Co. will conduct the operations.

Cymric Area Test Rigging

With Robert S. Lytle conducting operations, the Carrie Estelle Doheny, Lucy Smith Battson, Los Nietos Co. interests are under way with Sheep Springs No. 1. Now rigging up, the wildcat is on sec. 20-29s-21e, south of the South Belridge field.

SAN JOAQUIN VALLEY WILDCATS

Area	Well	No.	Section	Depth	Status
Fresno County					
Cantua Creek	Richfield Oil Corp., Cantua Co.		14, 17-15		Location
Coalinga	Carrie Estelle Doheny, et al Lobre	43-24A	24, 19-15	4344	Abandoned
Jacalitos	Standard Oil Co. Well	61-35	35, 21-15		Bldg. Rig
Guijarral Hills	**Standard Oil Co., Well**	**82-29F**	29, 20-16	9151	Completed
Kingsburg	Superior Oil Co., White	1	29, 16-22	5464	Drilling
Nicholson	Shell-Standard, Henderson	66-22	27, 15-15	12018	Abandoned
Kern County					
Antelope Hills	C.C.M.Co. Antelope Fee	12-1	12, 28-19		Location
	Shell Oil Co., Inc. Fee	78-31	31, 27-20	3013	Abandoned
Bowerbank	The Texas Co., Bowerbank	1-6-C	6, 29-24		Rigging up
Canfield Ranch	Shell Oil Co., Inc. KCL	84-27	27, 30-26	3480	Drilling
Comanche Point	T. W. Burnham, Chiquita	2	34, 12-19	1555	Drilling
Cymric	Los Nietos Co., Sheep Springs	1	20, 29-21		Rigging up
Dyer Creek	D. D. Dunlap, Dyer Creek	1	11, 26-27	2293	Testing
Midway-SE.	The Texas Co., P.U.P.	2	33, 11-23	10086	Drilling
Mt. View	DiGiorgio Fruit Corp., Well	3	7, 31-30	860	Drilling
Round Mt.	Gen. Pet. Corp., Railroad	1	23, 28-28	2644	Abandoned
	Harp & Brown, Olcese	1	17. 28-29		Rig
	Iseminger Bros., Well	1	2, 28-28	1115	Fishing D. P.
Strand	T.W.A.O. Co., KCL	76-8	8, 30-26		Rigging Up
	T.W.A.O. Co., KCL	32-17	17, 30-26	6045	Drilling
Kings County					
Hanford	Continental Oil Co., Drummond	2	36, 18-22	5401	Abandoned
Tulare Lake	Shell Oil Co., Inc. T.S.G.	21-28	28, 22-20	9756	Drilling
Madera County					
Mendota	The Texas Co., Gill	38-16	16, 13-16	9154	Drilling
San Luis Obispo County					
Midway, NW.	C.C.M.O. Co., Thomas	1	1, 31-21	8024	Drilling

Round Mountain Wildcats Active

General Pet. Corp. abandoned Railroad No. 1, sec. 23-28s-28e, in barren Vedder sand at 2644 ft. and moved equipment to section 15 of the township to continue wildcatting in Wakefield Community No. 1. On section 2 of the township Iseminger Brothers well No. 1 is sidetracking drill pipe fish after reaching 1115 ft. At last report the well had reworked from 680 to 705 ft. Latest to seek production in the area is Trico Oil & Gas Co. which located Howell No. 1 in the southwest quarter of sec. 32-28s-29e.

A.I.M.E. Junior Members of the Southern California Section

Junior Members of the Southern California Section of A. I. M. E. enjoyed one of their most successful dinner-meetings in recent months on the evening of February 4th in Huntington Park. An audience of some forty engineers convened to hear the timely subject of "Unitization" discussed by John F. Dodge, Consultant and Head of Petroleum Engineering at the University of Southern California, and E. C. Babson, Production Engineer, Union Oil Company.

Discussion was initialed by Mr. Dodge in a presentation of theoretical aspects of unitization. The speaker outlined legal, economic, and physical and structural reasons favoring unitization, then went on to review the four basic land situations with which all unitization projects would be involved.

Mr. Babson's ensuing talk was concerned with practical and theoretical aspects of unitization in operation. Factors such as well spacing and zonal development with reference to various types of reservoirs were discussed in some detail. The speaker summarized as follows the main advantages to be gained from a well-organized and efficiently managed unitization project: 1), greater ultimate recovery by systematic development and depletion; 2), longer flowing life of wells; 3), more efficient production operation.

Before adjournment, E. G. Trostel, District No. 5 Conservation Engineer, introduced to the audience a distinguished guest: William B. Heroy, Director of Petroleum Reserves, Petroleum Administration for War. In commenting upon the preceding discussion, Mr. Heroy stated that any present day unitization project should have as its goal the securing of the greatest quantity of production with the expenditure of the least amount of critical war material, but at the same time in accordance with sound and practicable principles.

SMITH - EMERY CO.
Since 1904
Oils Tested
Shipments Certified
Tanks Strapped
Offices and Laboratories
920 Santee St. Los Angeles
651 Howard St. San Francisco

JOHNSTON'S STAINLESS STEEL WELDING RODS

Assure Protection to your refinery equipment

A. P. JOHNSTON
1845 E. 57th St. - Los Angeles, Calif.
KImball 2508

OILFIELD ENGINES
New and Used Now Available

- LeRoi RXIP 6-cyl. 6¾x7 ..... Used
- Allis Chalmers W 25 ..... Used
- Allis Chalmers B 15 ..... Used
- Allis Chalmers B 15 ..... New

* * * * Fairbanks Morse—ALL SIZES of New ZC type engines.

All used engines thoroughly reconditioned

PRICES QUOTED ON REQUEST

THE OIL TOOL CORPORATION
3075 Cherry Avenue
Long Beach - California
Phone 481-81 L. A. Phone, NEvada 610-24

Camshafts—Methods of Extending Their Life and Increasing Engine Power Output

By Fred Noltimier,
General Petroleum Corp.
presented at C.N.G.A. February 4, 1943, monthly meeting at Rio Hondo Golf Club.

This paper is not intended to be a treatise on engine cam design. Instead our desire is to point out and illustrate methods of checking the performance of some types of cams which the natural gasoline industry has had in operation for ten to twenty years. During this time they have actually required little or no attention and therefore have probably received none. Now, however, natural wear plus the demand for every available horsepower of compressor capacity forces us to search more intently.

Normally there are but two reasons for investigating the condition of a cam. If, when new, an engine does not deliver its rated power output or valve troubles are encountered, the cam design or timing might be questionable; but this rarely happens. The other most plausible reason may occur some years later when visual wear of the cam itself, or of its follower, become noticeable and cause the mechanic to become suddenly cam-conscious. The more common forms of cam wear can be divided as follows:

1. Pock marks of corrosion are usually most prevalent on the front or lifting faces having high unit pressures at point of contact with roller followers. As the percentage of total surface area destroyed is usually small, this condition does not necessarily mean that the cams are no longer functioning with a fair degree of efficiency, but, from this point on, an accelerated rate of wear on both cams and rollers may be expected.

2. A more or less smooth and even wear upon both sides and top of the cam lobe may occur. This type of wear will cause an appreciable falling off in power with no ready means of ascertaining its cause or even its presence.

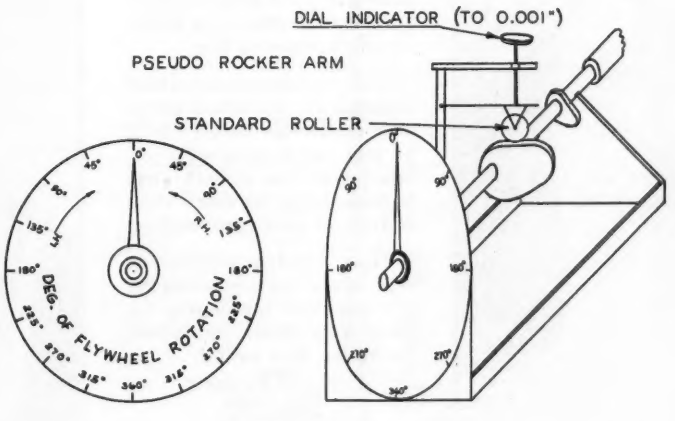
3. Wavy, irregularly worn places on cam faces can be easily detected. The common causes are continuous operation with excessive push rod clearance, sticky valves with a tendency to "hang up" at certain points, or improper valve spring tension.

There are three principal methods of checking cam performance. The first two described have the advantage of making camshaft removal from the engine unnecessary but do not permit such complete examination as does the third.

1. With the engine cold so that there are no rapidly changing temperatures of parts affecting push-rod clearances, carefully set for the normal operating clearance. Arrange devices on both inlet and exhaust valves which will indicate when they start to open or become completely closed. Then slowly bar over the engine noting at which points, in terms of degrees of flywheel rotation, the valve events take place. Should the flywheel be unmarked for valve timing, a steel tape laid around the wheel from the stationary index to H.D.C. (or C.D.C.) can be used to measure the intervening distance and from this can be calculated the respective valve timing.

2. While maintaining the engine "on the line" and under full load, indicator stop cards or valve cards may be taken. By using a very light indicator spring to magnify the bottom of the conventional power card, an analysis may be made of the scavenging or exhaust valve action, the inlet or filling strokes, and the beginning of the compression strokes. From these diagrams a diagnosis of valve, air intake, or exhaust troubles may be made.

3. A third and quite accurate method of cam checking involves the removal of camshaft from en-



SCHEMATIC VIEWS

CAMSHAFT TESTING JIG FIG. 1

Increase of 400,000 Bbl. in Daily Demand Seen in 1943

From
THE OIL & GAS JOURNAL
December 10, 1942

Your National Ideal Equipment will Handle the job

★ The information contained in our 1942 advertising on the proper care and maintenance of National-Ideal Machinery and Equipment has been reproduced in two convenient forms; one on cardboard for posting at point of field operations and the other in a folder for office reference files.

In view of the contemplated demands for increased petroleum production during 1943, we urge you to write us for sufficient quantities of both types of these forms for distribution throughout your organization.

You will find this information most helpful in maintaining the efficiency and prolonging the life of your present equipment during the War period.

NSCO

THE NATIONAL SUPPLY COMPANY

Executive Offices: Pittsburgh, Penna. • General Sales Office: Toledo, Ohio • Division Offices: Fort Worth, Texas; Tulsa, Okla.; Torrance, Calif. EXPORT: The National Supply Corporation, 30 Rockefeller Plaza, New York, N. Y., U. S. A.; River Plate House, 12 South Place, London, E. C. 2, *Limited Liability.*

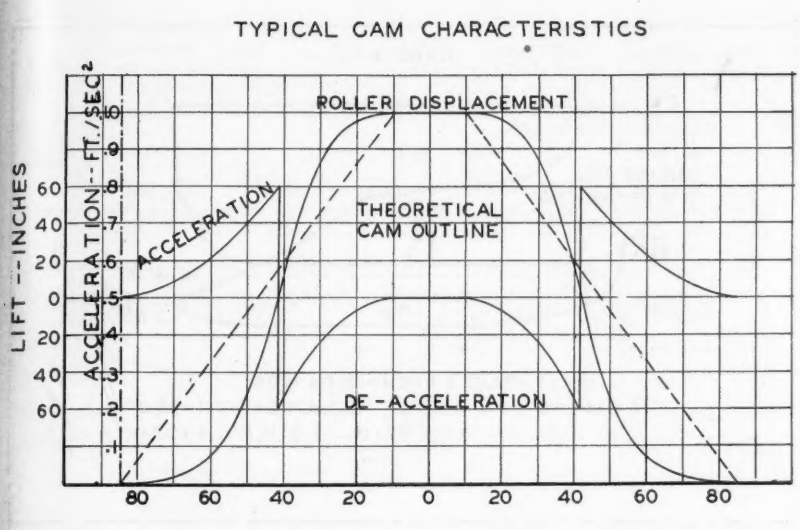


FIG.2 CAMSHAFT ROTATION--DEGREES

gine and placing of same in a testing jig. A special dial comprising 720° of flywheel rotation for one complete camshaft revolution with an accompanying adjustable index permits direct reading of valve events as produced by the respective cam.

Figure 1 is a simple schematic diagram of such a cam testing jig. This shaft and both cams are forged integrally so that the setting to one reference point in reality controls all four events; namely, the opening and closing of both the intake and exhaust valves. Operation consists of turning the camshaft so that the roller-follower rests upon the intake cam base circle with the attendant dial indicator set to read 0.000". Rotate camshaft in the proper direction until the roller is starting to be lifted by the gradual incline of the cam ramp and the dial indicator reads +0.020" which corresponds to the 0.020" engine valve push rod clearance. Now set the pointer index at 10° ahead of H.D.C. and tighten to shaft as this is the point of intake valve opening, and all other valve events are read from the position of the index when the dial indicator reads +0.020" above the base circle on the respective cam ramps.

This figure may be made very elaborate, if deemed justifiable, by mounting a roller and a 1.000" range dial indicator above each cam in the same relative positions as in the actual engine. On the other hand, once a satisfactory cam of known characteristics has been secured, a single dial indicator with the pressure point bearing directly upon the cam can be used for checking questionable cams. However, the correlation between such a jig and actual engine performance must be worked out to insure proper interpretation.

Figue 2 is an illustration of typical cam characteristics. Displacements or cam roller lift in inches is plotted against degrees of camshaft rotation. The dotted line represents the theoretical movement desired but which must be changed until it is represented by the heavy line of gradually increasing and decreasing slope. Of course, fast valve action is desirable but it is governed by the mass and inertia of the moving parts, or, in reality, by the mass and

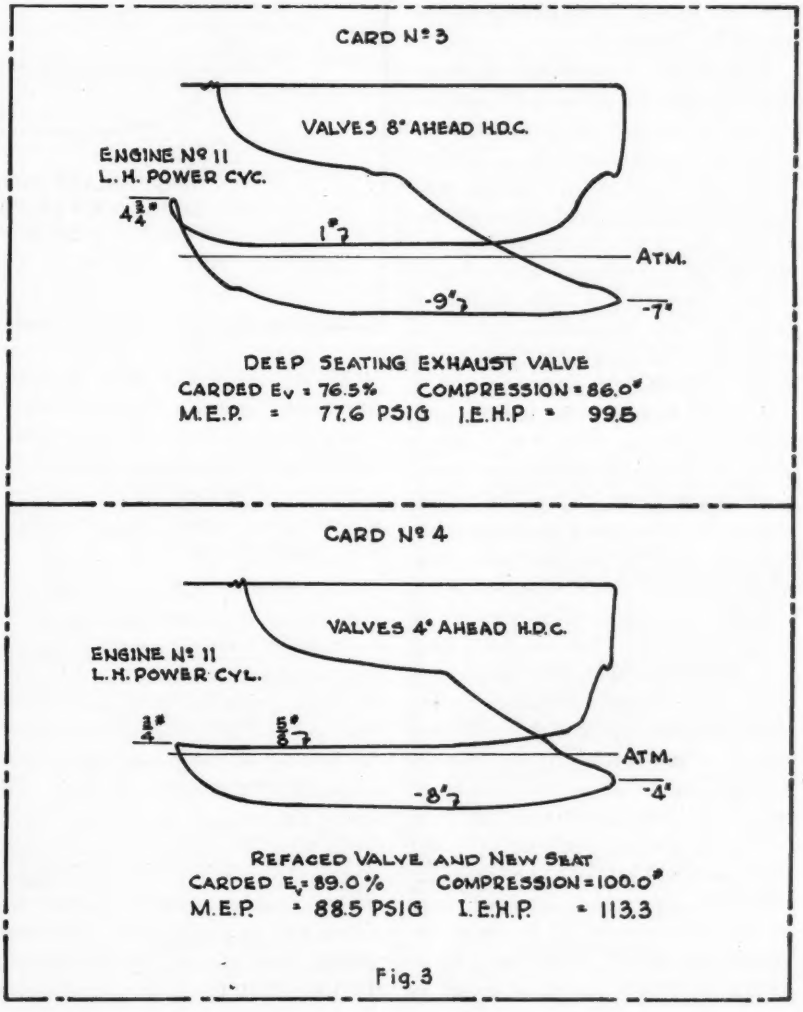

CARD Nº 3
VALVES 8° AHEAD H.D.C.
ENGINE Nº 11
L.H. POWER CYC.
ATM.
DEEP SEATING EXHAUST VALVE
CARDED Ev = 76.5% COMPRESSION = 86.0#
M.E.P. = 77.6 PSIG I.E.H.P = 99.5
CARD Nº 4
VALVES 4° AHEAD H.D.C.
ENGINE Nº 11
L.H. POWER CYL.
ATM.
REFACED VALVE AND NEW SEAT
CARDED Ev = 89.0% COMPRESSION = 100.0#
M.E.P. = 88.5 PSIG I.E.H.P. = 113.3

Fig. 3

acceleration. The acceleration curves must therefore be given consideration or a rapid and uneven wear of cams will result. Of more immediate consequence will be the pounding of valves and seats unless valve closure has been carefully decelerated at point of contact.

A cam testing jig is of considerable assistance in determining the amount of "ramp" or very slow lift required in absorbing the push-rod clearance without excessive shock as well as the reverse action or depositing of valves upon their seats without a delaterious pound. Most cams of late design, particularly those using a roller followerer, do not depend upon a straight tangential radius or the straight part of the cam face forming a perfect tangent with the base circle. To avoid the resultant shock, a "transition radius" or "ramp" is employed as depicted in Figure 8.

This figure is presented to show the comparative shape and size of the actual cam, to that of the master. An explanation is in order. After the experimental stage was passed and actual production entered into, two master cams were made, one each for the intake and exhaust cams. To insure a high degree of precision and maximum speed of grinding, a 22 inch wet wheel turning at 1.000 R.P.M., was used. A 3 inch roller followed the master cam which rotated at 20 R.P.M. These masters were attached to the camshaft undergoing the grinding by means of a key, and an adjustable indexed centered hub and pin. The whole assembly was mounted upon a large external power grinder in such a manner that the camshaft and master could rock back and forth while being held with a constant pressure against the grinding wheel. The precision was within ±0.001", quite satisfactory for large cams. It is of importance too as a variation of base circle or of ramp near point of intake valve opening can effect the timing of valve events at the ratio of 3/4° of flywheel rotation per 0.001" deviation. Base circles have been found as much as

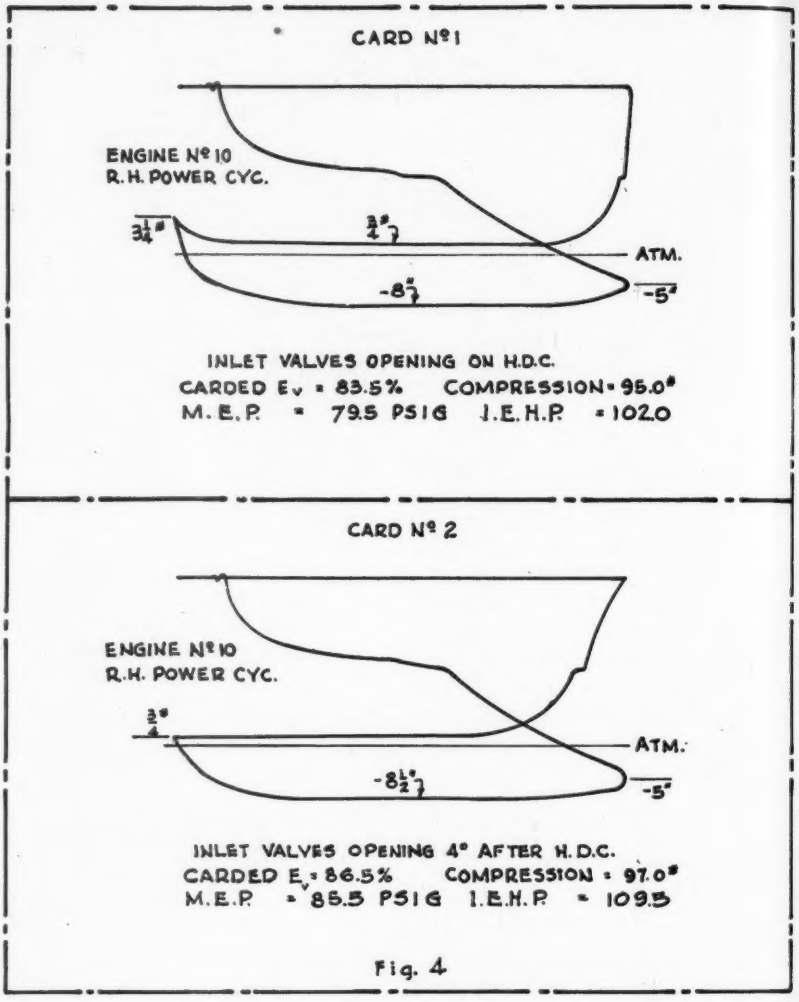


Fig. 4

0.008" out of round and in such places that actually resulted in the entire camshaft being 6° out of time with a noticeably decreased power output even though properly timed according to conventional and available standards.

The ensuing indicator diagrams were taken in a conventional manner, using a 180 psig. per inch spring for the power cards and a 10 psig. per inch spring for the valve cards. The valve cards merely represent the bottom of the power cards, but enlarged at a ratio of 18 to 1. Of course the top one-third of the valve cards must be disregarded as compression was being undergone by a rubber snubber placed around the piston rod to gently snub and completely stop its movement during the time that the cylinder pressure exceeded approximately 8 psig. Thus the top line, or explosion stroke, must be completely disregarded. The line following from the upper right to the left represents the actual pressure within the cylinder during the exhaust or scavenging stroke. The reversal of the continuation of this line, from left to right, indicates the cylinder vacuum during the intake or filling stroke. Its second reversal, from right to left, shows the pressure build-up from negative to positive during the beginning of the compression stroke. The earlier the compression stroke crosses the atmospheric line the better the volumetric efficiency and therefore the greater the amount of combustible charge induced.

Figure 3 is shown to illustrate the combined effects of a worn cam and

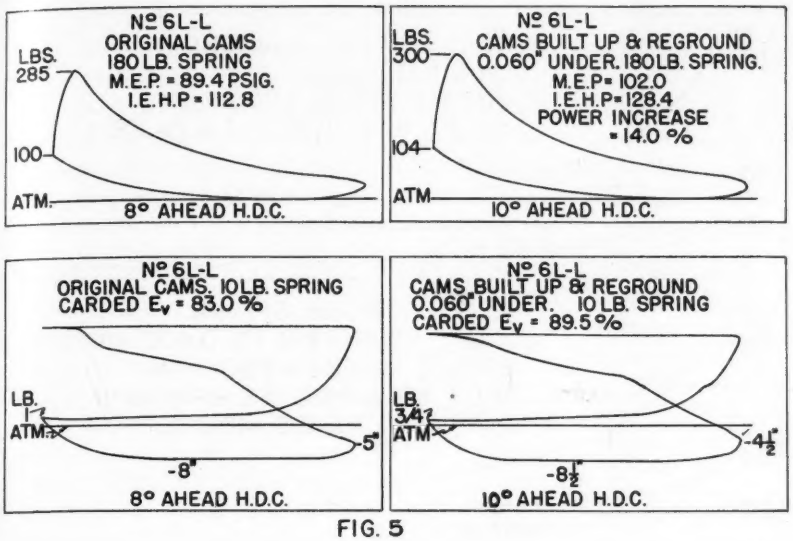


FIG. 5

a slightly deep-seating exhaust valve. Card No. 3 is a valve card taken with the camshaft set for the intake valve to open 8° ahead H.D.C. or within a reasonable tolerance of the recommended 10° ahead. The exhaust cam displayed no appreciable wear, yet it existed sufficiently so that no reserve contour was left to offset a small amount of seat wear. The 4-¾ # psig. pressure in the cylinder indicated a partial retention of burned gases which upon reexpanding prevented entry of a portion of the fresh charge. Replacing of seat and replacing of valve did not entirely correct the situation, closure was still early. Retarding of the camshaft 4° produced the net results shown by comparison with Card No. 4.

Cards No. 1 and No. 2 of Figure 4 show the effect of retarding another camshaft 4°. This cylinder was weak but examination of valves, seats and camshaft disclosed no appreciable wear. Valve cards and checking of camshaft timing proved that cam wear did exist. It was the investigation of conditions like these that led to the fabrication of the improvised cam testing jig and experimentation to determine how late the intake valve could be closed in order to secure a maximum of combustible charge, yet lose no appreciable amount of this charge in case the engine should operate considerably under speed.

New camshafts were secured and their performance and characteristics carefully checked in an engine selected as a "guinea pig" because of its accurate indicator motion and facilities for varying the compressor or loads. Camshaft timing was again checked in many settings, both early and late, and the indicator valve cards analyzed as well as power cards being compared. The camshaft we desired would require three changes: an earlier opening and closing of exhaust, and a later closing intake. Graphically the intake valve was closing at about the proper time, but actually it seemed many degrees early.

Our first job was to build up one side of each cam, without excessive distortion from heat. The opening side of the exhaust cam was built up slightly, the closing side of the intake cam more. Then both cams were ground one half at a time using small wheels and the same size follower and maintaining the proper cam contours, follower acceleration, and velocity. When the job was done, which included considerable hand filing, checking in the jig, etc., the cams were ground a total of 0.060 inches under, but the cam spread and their relationship to each other was somewhat changed.

The results were as shown in Figure 5. The engine had been one of our best. Now, with 14 percent additional power output would the frame and bearings hold up, and if so, how about the heat transfer through the rings? Well, to shorten the story, that was 25 months ago. To date there has been no unusual maintenance, and bearings, rings and valves are holding their own. Of course, the maximum explosion pressures and total thrust upon the bearings is no greater under the greater load at rated speed than is sometimes encountered at sub-speed operation. This had been pre-determined.

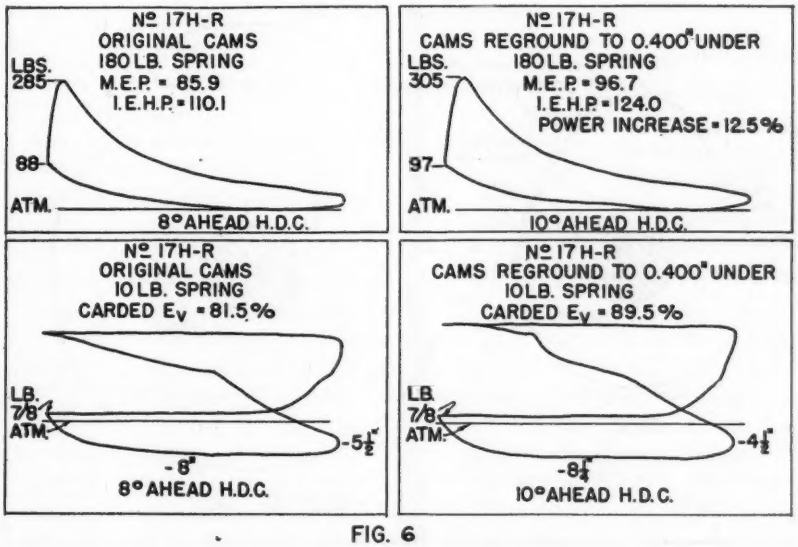


FIG. 6

It is desired to stress one point. In all these cases where comparative cards are shown the engines always had timing and fuel mixtures adjusted for maximum power, and were loaded but operating at the same rated speed unless otherwise specified. With the exception of the camshafts no mechanical changes, even that of a spark plug, were permitted while these tests were being made.

As the machine shop in which the original work of regrinding was done, two years ago, was rapidly being converted to what we now term 100 per cent defense work, we did not then have sufficient time to completely explore the field for a suitable hard surfacing material. We underground one set of camshafts sufficiently to make our desired changes and found it necessary to go to the extent of 0.400 inches undersize in base circle diameter. They, too proved quite satisfactory so a year ago after having had some half dozen rebuilt and converted shafts in successful operation for a year, the work was resumed.

Figure 6 includes both power and valve cards taken on an engine before and after some of the heavily underground cams were installed. The valve timing, acceleration, etc., are the same as for the cards shown in Figure 5 with the rebuilt cams.

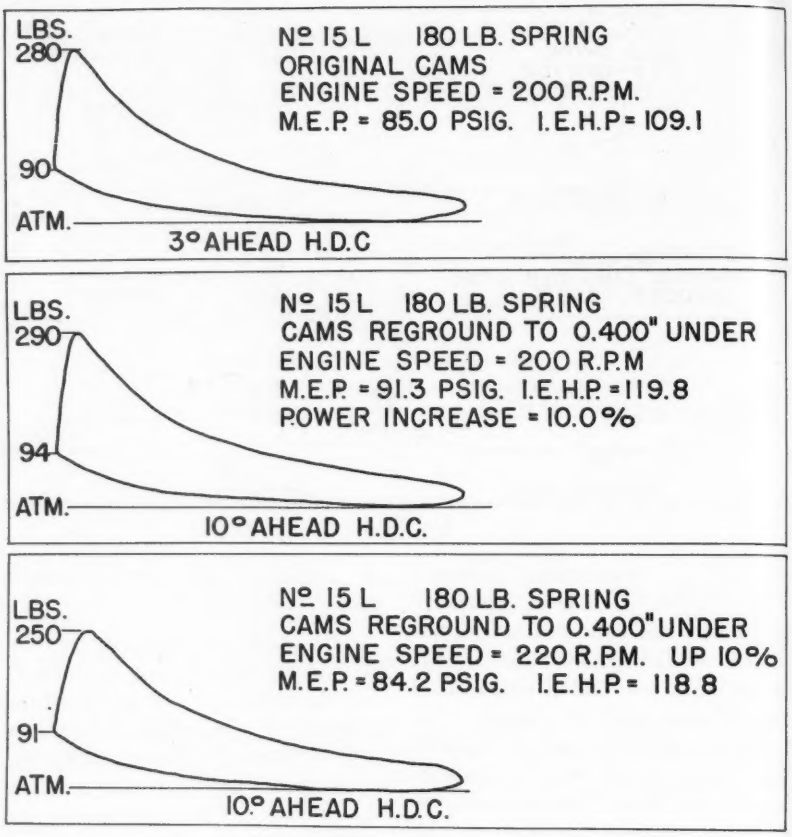
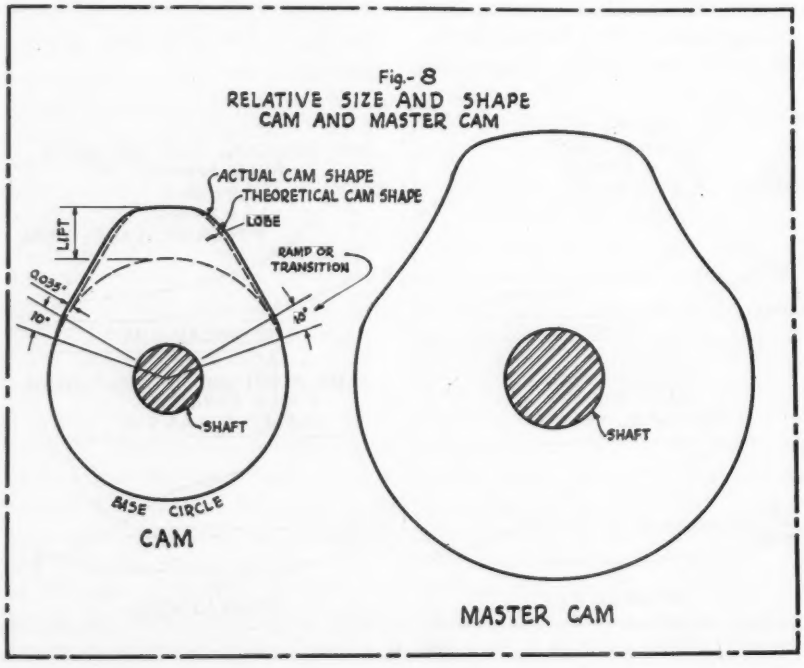


FIG. 7

Figure 7 displays power cards from a unit which for various reasons is sometimes operated up to 10 per cent above rated speed. No adjustments were made between the taking of Cards No. 2 and No. 3 as is shown by the apparently late ignition of Card No. 3. The lowered compression pressure, maximum explosion pressure, and M. E. P. show the effect of insufficient time for complete filling of the cylinder by the fresh combustible charge. Bear in mind however that the reverse is true whenever an engine is allowed to "lug" under speed, thus setting up many added strains.

Now then, to touch the fringe of metallurgy involved in rebuilding cams. As far as results are concerned it apparently makes no difference whether you undergrind, within limits, or completely rebuild and regrind,—its the shape of the cam that counts. Most cams are forged steel, usually a low carbon steel, some are surface hardened,



some are not. The hardness may vary from 130 in some to 600+ Brinell in others. The average of my experience has been under 200 Brinell. At this hardness the cams are soft enough to have undergone wear, apparent or otherwise, in ten years of operation. A good chrome —moly rod, applied with either torch or arc, may attain a hardness of 300 Brinell. The real hard-facing alloys are fine, if your priority will secure them and you can get wheels to grind it. The irregular shape of camshafts cause most of the heat treaters to talk about distortion and the added cost of straightening within ± 0.003 inches which isn't close enough.

Plain flame hardening performed by experienced men and followed by an air quench then stress relieving, was the answer to our problem, and it raised the Brinell hardness of the cam faces from 190 to 500+ with no distortion. It makes a sorry looking mess of your polished grinding job, but the scale will buff off and you will have a graduated hardness penetration well in excess of 0.050 inches that will probably last longer than you will worry about it. And, we have checked a few dozen for distortion without finding any.

A natural question arises, "Is it worth while to go to the necessary expense and work at this time to revamp some old engines?" The answer is if installed direct connected compressor capacity is worth $50.00 per B.H.P. now, our additional B.H.P. thus gained has cost much less than 10 per cent of what it is worth.

It is my desire to mention the assistance in this work of two gentlemen both of whom I believe are present tonight. First, Mr. Bennett Schock, of the General Petroleum Corporation, for his timely suggestions, untiring assistance ,and limitless patience in testing of the "guinea pig" engine. Second, Mr. Arthur Bender, of R. D. Biggs & Son, for making available his experience in producing that funny looking master cam and really placing this cam regrinding on a production basis. Gentlemen, you don't find many individuals these days with a busy and high priority bit of machinery who are willing to play ball with an "in the dog-house" industry like ours.

The next, our first March, issue of California Oil World will carry the second of the two papers, delivered at the February meeting of the CNGA. This is the paper entitled "Balancing of Oil and Gas Engines".

U. S. C. Offers New Course

A course in Drilling Mud Technology offered by the Petroleum Engineering Department of the University of Southern California, has just started at University College, on the U.S.C. campus. The course began on Tuesday, February 9, and will continue for twelve weeks, the class meeting once weekly at 7 p. m.

All phases of "rotary mud" technology are discussed, including preparation of muds, chemical treatment, colloid chemistry of clays, field calculations, and the testing and evaluation of muds. The course is given by Mr. D. H. Larsen, Research Director of the Baroid Sales Division, National Lead Company, and may be either taken for regular academic credit or audited.

Gavin Elected Director S. F. Ad Club

George D. Gavin, Assistant to the General Sales Manager of Tide Water Associated Oil Company was recently elected a Director of the San Francisco Advertising Club. Gavin, who has many friends in the petroleum industry, has been identified with various phases of Ad Club activities, having served as Chairman of the Membership Committee and currently acting as Chairman of the Civic Affairs Committee.

Engineering, Technology, latest news—twice a month in California Oil World.

Instructions for Care of Rotary Drillers' Hose

Prepared by
The Rubber Manufacturers Association, Inc.

Don't use too short a hose.

Always provide for ample loop at both ends of travel.

Install goosenecks at both standpipe and kelly to allow hose to hang without strain.

Use safety fasteners of proper contour. Attach snugly, not too tight.

Uncoil stored or crated hose carefully—don't snake it out.

Avoid twisting hose at any time.

Don't kink or crush.

Do not allow hose to burn against wire line or derrick frame.

Avoid extreme fluctuations of internal pressure.

Grease kelly swivel often. Winding of hose about grief stem will kink hose and cause premature failure.

Lower carefully when removing hose from derrick—do not drop.

Don't pile heavy weights on the hose.

Before storing hose, flush with clear water and drain.

Don't allow oil or grease to lie in the tube.

Inspect for minor cover breaks. Clean out dirt. Fill with rubber dough.

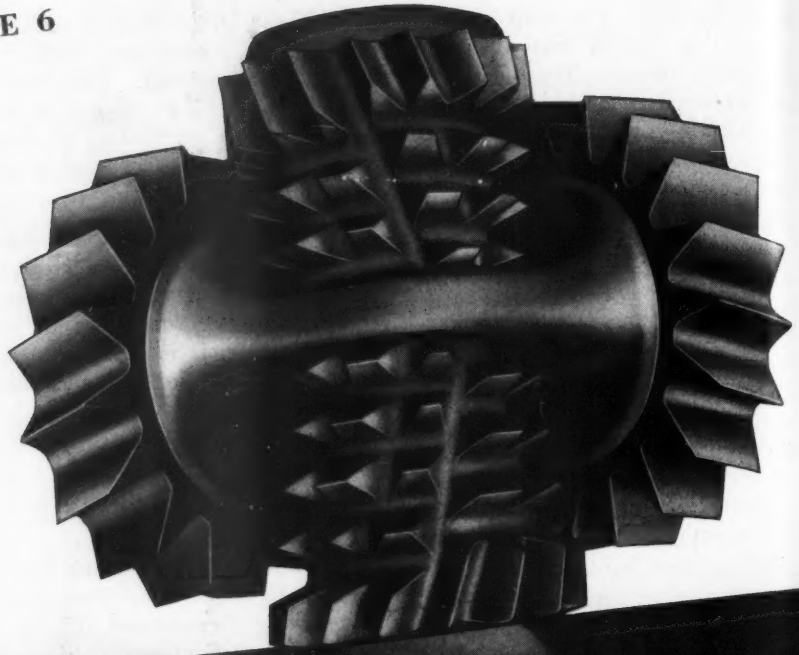
When hose is stored, do not expose it to sunlight and weather.

If possible, store hose laid out straight. When necessary to bend, coil in a 10-foot diameter circle.

In transporting hose from one location to another provide proper carrier. Do not drag with winch line.

If hose has clamped-on fittings, always tighten clamps or bolts before hose is put under pressure and inspect regularly to make sure they are tight at all times. When inserting nipples into hose, use rubber cement or shellac—never use paint, oil or grease.

TYPE 6



CUT Drilling Costs

Drilling Time

Now, the ability to "make hole" is more important than ever before. H. C. Smith Rock Bits are built to give constantly faster cutting action, straighter full-gauge hole with operating economy that means more footage per bit.

USE

H. C. SMITH ROCK BITS

H C Smith Oil Tool Co.

GENERAL OFFICES AND PLANT - P. O. BOX 431, COMPTON, CALIF.

Branches: Bakersfield · Ventura · Santa Maria · Avenal